

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 791.—Vol. XX.]

LONDON, SATURDAY, OCTOBER 19, 1850.

[PRICE 6D.]

POT HOUSE BRIDGE IRON-WORKS, NEAR BILSTON.—TO IRONMASTERS, ENGINEERS, AND OTHERS.

MR. R. S. WALKER will sell, by AUCTION, on Monday, the 28th day of October, 1850, without reserve, upon the above premises, by order of the trustees and assignees of Messrs. Arrowsmith and Davis, all the remaining portion of the STOCK IN TRADE—STEAM-ENGINES, valuable lathes and tools, drilling machines, pair of shears and punching plate, heating furnace, screwing machine, powerful crane, screw lathes, griststones, office fixtures, and a variety of miscellaneous articles—particulars of which will be given in catalogues, to be had one week prior to the sale, at the office of the auctioneer, Red Lion-street, Wolverhampton.

Sale to commence at Eleven o'clock in the morning.

TAW VALE RAILWAY.—IMPORTANT SALE.

MR. G. HEARSON respectfully announces, that he is instructed by Mr. Thorne, late contractor for the works on the above railway, to OFFER for SALE BY AUCTION, at the Railway Station, Barnstaple, on Wednesday, October 30th, and two following days, ALL THE MATERIALS that have been provided for the completion of the contract, and the PLANT now on the line, the whole of which must be sold without reserve, the Taw Vale Railway board having directed the same to be removed forthwith.

The MATERIALS comprise about 6000 cubic feet of painted memel timber, the greater part of which is in lengths of from 40 to 60 feet, carefully selected at Southampton and other parts for the permanent girders of the river bridges; 3500 feet of 3-inch memel plank; 2000 feet of yellow pine timber; 1200 feet of plank, of various sizes; 1300 painted railway sleepers, 9 feet long, 10 by 4; 1800 feet of oak, elm, and ash timber; 10 tons of new bar iron, of various sizes; 1 tons of wagon and scrap iron; 12,000 bricks; 30 tons of larch poles; 2000 feet of ashlar stone; 600 yards of building stones, &c., &c.

The PLANT comprises a locomotive engine and tender, by Chapman, very little worn. Particulars as follows:—inside cylinder, 14-inch diameter, and 18-inch stroke; driving wheels, 6-feet diameter; leading and trailing wheels, 4 feet; strong copper fire-box, nearly new; and 111 tubes, 7½ feet long; outside diameter, 2-inch. The tender is constructed to hold 600 gallons. Wheels, 4-feet diameter. A patent lifting jack; 210 tons of contractors' rails, 41 lbs. to the yard; 180 earth waggon; 40 sets of horse harness; 2 timber waggon, with gins; 120 new picks; 80 shovels and grating tools; smith's bellows, and tools for four workshops; 5 pile engines, complete; a travelling crane, equal to 5 tons; several brass lifting pumps, with pipe; 3 lead pumps and pipe; 1 iron pump, and iron pipes of various sizes; a large quantity of gas fittings; 5 mortar mills; lifting jacks; boring tools; barrows; about 3000 temporary sleepers, and various other articles.

The whole of the above will be particularised in catalogues, which may be had gratis of the auctioneer, Litchdon-street, Barnstaple, one week previous to the sale.

Approved bills will be taken at three months for all purchases above £30; and at six months for purchases above £100.

Each day's sale to commence at Eleven o'clock in the forenoon precisely.

Dated Barnstaple, October 2, 1850.

DEAN FOREST.—VALUABLE COAL AND IRON WORKS.

Offering an opportunity seldom offered for acquiring a lucrative and first-rate concern.

MESSRS. ADAM MURRAY & SON are instructed to sell, by AUCTION, at the King's Head, NEWPORT, MONMOUTHSHIRE, on Saturday, the 16th day of November next, at Twelve o'clock, at noon (unless an acceptable offer be previously made), ALL THE IRON AND COAL WORKS, situate at BREAM, in the hundred of ST. BRIAVELS, GLOUCESTERSHIRE, now in the occupation of the BREMLEY HILL IRON AND COAL COMPANY.

The COAL-WORKS comprise two gales of the WHITTINGTON OR YARD DELF VEIN OF COAL, known as the Bromley Hill level, and the Midsummer level, amounting to 300 acres, subject to a Royalty to the Crown of 14d. per ton, or a minimum rent of £4 a year. Adjoining, is the BREMLEY HILL IRON MINE, of 400 acres, subject to a Royalty of 1d. per ton, and an annual rent to the Crown of £10. A well built BLAST FURNACE and a STEAM-ENGINE of 45-horse power, with various buildings, are erected on the mines, and a never-failing stream of water runs through them. These mines are well situated both for railway and water carriage.

For further particulars, apply to Mr. Arthur Ryland, solicitor, Cherry-street, Birmingham; Mr. Reginald A. Parker, solicitor, Old Jewry Chambers, London; Mr. Fryer, solicitor, Coleridge; or to Messrs. A. Murray and Son, 35, Craven-street, Strand, London.

UPSET PRICE REDUCED.

EAST OF SCOTLAND MALLEABLE IRON-WORKS.—TO BE EXPOSED TO SALE, BY PUBLIC AUCTION, within the TOWN-HOUSE, DUNFERMLINE, on Wednesday, the 6th day of November next, at Twelve o'clock noon, the EAST OF SCOTLAND MALLEABLE IRON-WORKS, at DUNFERMLINE, comprising—A STEAM-ENGINE, of 80-horse power, working the machinery consisting of FORGE and 2 PUDDLE BARS TRAINS, of 16 in. diameter, HAMMER and PATENT SHINGLING MACHINE; also a 16-in. MERCHANT BAR or RAIL MILL, a 12-in. MILL for ordinary sized merchant bars, and an 8-in. GUIDE MILL, 13 PUDDLING FURNACES and 6 MILL FURNACES, the whole capable of producing 120 tons of bar-iron weekly.

A REFINERY STEAM-ENGINE, of 45-horse power, with blowing apparatus, complete, and two fires erected.

A complete SET OF WORKSHOPS, containing a 20-horse power STEAM-ENGINE, driving a powerful ROLL TURNING LATHE.

A PUMPING and CLAY MILL STEAM-ENGINE, of 16-horse power, used for the manufacture of fire-brick and pumping water for supply of engines.

Also the ESTATE of TRANSY, consisting of about 107 imperial acres, with elegant MANOR-HOUSE and PLEASURE GROUNDS, situate about half a mile to the east of the town of Dunfermline.

The above will be put up in one lot, at the reduced upset price of £16,000; if not sold in one lot, the Iron-Works will be then exposed separately, at the very low upset price of £9500; and if the Works be disposed of, the Estate will then after be put up at the sum of £6500.

The purchaser of the works will have it in his option to take all the necessary tools, loose machinery, and stocks of different kinds, at a valuation.

There will also be SOLD, a STEAM-ENGINE, of 80-horse power, intended to drive the rolling-mills, apart from the forges, with strong cast-iron framing and relative machinery.

For further particulars, application may be made to Mr. James Inglis, the Chairman of the Board of Management; or to Johnstone, Russell, and Craig, writers, in Dunfermline, in whose hands may be seen the title deeds of the lands and articles of roup.

Dunfermline, October 3, 1850.

FOR SALE, BY PRIVATE CONTRACT.

THE LONDON VULCAN FOUNDRY AND ENGINEERING ESTABLISHMENT, PORT-DUNDAS, GLASGOW.

These WORKS have been erected within the last few years regardless of expense, having all the recent improvements and facility for carrying on an extensive business, capable of producing 40 tons castings daily, from five cupolas of the best construction.

The BUILDINGS and PLANT are most extensive, substantial, and well arranged, having cranes to sweep the working floors, erecting shays, yard, and wharf, all being most advantageously situated on the Forth and Clyde Canal, Port-Dundas, having free access to and in the immediate vicinity of the principal Scotch mineral districts, and where vessels may be loaded for the London, Liverpool, and other markets.

These works are well worthy the attention of the trade, being at present in operation, and intending purchasers may have them either with or without present contracts.

May be viewed on Tuesdays and Fridays, between the hours of ten and three o'clock, on application to Mr. Alexander Balderston, 18, Rindfield-street, Glasgow, who will furnish all other particulars.

TO BE SOLD, BY PRIVATE CONTRACT, EIGHTEEN

SETS OF RAILWAY WHEELS AND AXLES, with wrought-iron spokes and trees, 2 feet 6 inches diameter, 54 inches on the face, and 14 inch thick, narrow gauge.

TWO FOUNDRY CRANES, to carry twenty tons each, with chain, blocks, and gearing, complete.

FIFTEEN-HORSE CONDENSING STEAM-ENGINE, with direct action, having been in use only about six months.

TWELVE-HORSE HIGH-PRESSURE STEAM-ENGINE, quite new.

Apply to Thomas Dixon, iron merchant, Bradford, Yorkshire.

TO BE SOLD, BY AUCTION, THE FREEHOLD FARM,

called "THE HOLE," containing 103 acres (or thereabouts) of anciently-enclosed LANDS, and 222 acres (or thereabouts) of more recently enclosed PASTURE, and an undivided moiety of an outer adjoining PASTURE, containing 838 acres (or thereabouts) situate in PRIORSDALE, in the parish of ALSTON, in the county of CUMBERLAND.

The MINERALS under the anciently enclosed lands belong to the proprietor of the soil, and those under the two pastures belong to him jointly with the Commissioners of the Greenwith Hospital.

The ESTATE is intersected by NUMEROUS VEINS OF LEAD ORE, mostly unexplored, but in strata favourable to the production of lead ore, being the same as in the adjoining manor of ALSTON MOOR, where extensive lead mines are worked.

The time and place of sale will be announced in a future advertisement. References to Messrs. J. and R. Gibson, solicitors, Hexham, Northumberland.

VALUABLE MINERAL PROPERTY TO BE IN PART

OR WHOLLY DISPOSED OF.—This most desirable METALLIFEROUS SETT, consisting of nearly 3000 acres, is situated in one of the renowned mining districts of central WALES. One discovery of SILVER-LEAD ORE, made upon it some few months ago, was considered of so singular and promising a nature, that a brief account of it was then published, and subsequently copied into most of the leading papers of the kingdom.

Since that period a shallow sink has been made on the lode, which is 6 feet wide, traversing a beautiful white siliceous hills. The analysis of the ore, of which there is about 20 tons on the bank, gives 75 per cent. of lead and 80 ounces of silver to the ton; indeed, the last assay of the ore, found at about 7 fathoms from the surface, gave the extraordinary quantity of 300 ounces of silver to the ton. There is a fine mixture of lead ore at the bottom of the present shallow shaft. The mine is 9 miles (of good turnpike-road) from the shipping port, and a fine stream of water runs close past it, offering every facility for the development of its invaluable mineral resources.

For further particulars apply (post-paid) to "X. Y. Z." at the office of the Mining Journal, 99, Fleet-street, London.

MR. JAMES CROFTS, in renewing his offers of services to Capitalists in favour of INVESTMENTS IN BRITISH MINES, is encouraged to refer, in terms more marked than he has hitherto done, to the classes of Mines either paying dividends or progressing rapidly towards that satisfactory position. Such remarkable success has attended the workings of numerous Cornish Mines during the last few months (instance the Alfred Consols, Wellington, West Seton, &c.), as to demonstrate that it is only necessary to make a judicious selection of the adventure to insure profits quite as certain as any mercantile speculation whatever; and Mr. Crofts will be happy to indicate such undertakings as present the greatest chances of permanent dividends, or ultimate success in the workings, whether on a large or a small scale.

Mr. CROFTS has FOR SALE West of England (10 shares), Wheal Crebor (10 shares), Bedford United (10 shares), South Tamar (30 shares), Wheal Treacoll (20 shares), North Shepherds (5 shares), Lamerhoo (10 shares), Wheal Benny, Comblawn, Wheal Vincent, and Wheal Sarah. The two latter mines (the lodes having been reached, and ore raised sufficient to show that the opinions of their capability to become safe investments are well based) are particularly worth attention; and Mr. Crofts is ready to open a treaty with any capitalist for an interest in each, on highly favourable terms.

Mr. CROFTS will punctually attend to communications from the country, whether for the sale or purchase of shares, and transacts business only for principals.

* * * Wanted to purchase—3 shares, Devon Great Consols.

No. 4, King-street, Chancery, October 18, 1850.

CRAIG-Y-MWYN LEAD MINING COMPANY, LLANRHADR, MONTGOMERYSHIRE.

In 1600 shares.—Deposit £2 per share—payment, £4 on receipt of scrip, and the remaining £4 in monthly instalments of £1 each, the whole to be paid in four months.

The FORMATION of this COMPANY being now COMPLETED, and the annexed Rules and Regulations adopted for the government of the Company, the following gentlemen were appointed a Committee of Management:—

RICHARD N. BROUGHTON, Esq. (Chairman).

THOMAS BIBBY, Esq.

ROBERT BROUGHTON, Esq.

BELL WILLIAMS, Esq. (Secretary).

WILLIAM LLOYD ASTERLEY, Esq.

BANKERS—Oswestry Old Bank.

PURSER—Thomas Bibby. LOCAL MANAGERS—Edward Hampson.

Applications for the remaining shares to be made to the Secretary, at his office, No. 16, Castle-street, Liverpool, where reports, together with plans and sections of the works, may be seen.

SUMMARY OF THE RULES ADOPTED FOR THE GOVERNMENT OF THE COMPANY.

That the adventure be divided into 1600 shares, of £2 each.

That the affairs of the company be managed by a committee of five, three of whom shall form a quorum.

Members of committee to possess 50 shares.

General meetings to be held every three months.

That the mine be worked under the Cost-book System.

Accounts to be made up monthly, and paid by the purser, and to be submitted to the general meetings, at which calls, not exceeding the estimate for the succeeding three months shall be made, if required.

Dividends to be declared at general meetings, and committee elected for six months.

Each share to represent one vote—proxies to be held by shareholders only.

Officers of the company to be appointed, or removed, at the general meetings, such meetings to be called by circular, giving seven days' notice, with a statement of business to be transacted at general meetings.

Lists of shareholders to be presented at each general meeting, and be signed by the chairman.

All transfers of shares to be passed through the books of the company.

That all monies be paid to the purser, who shall pay the same to the company's bankers, to be drawn out by cheques, signed by three members of the committee and the secretary.

Copies of resolutions, and abstract of accounts, to be sent to every shareholder, within seven days after general meetings.

Any shareholder to be at liberty to withdraw from the undertaking, by giving three months' notice in writing, and paying liabilities up to the expiration of such notice.

WEST PHENIX MINE, in the parishes of LINKING-HORNE AND ST. CLEER, NEAR LISKEARD, CORNWALL.

Divided into 1024 shares.—Deposit £2 per share.

At a Meeting of Shareholders, held at the offices of the Company, No. 14, High-street, Exeter, on Monday, the 14th day of October, 1850.

JEFFERY LANG, Esq., M.D., Chairman.

Several reports and other documents having been read, whereby the evidence is conclusive and undeniable, as regards the West Phoenix lode being the same as the Phoenix, on which an immense quantity of rich ore is now raising; and as it is fully demonstrated to this meeting that similar large deposits positively exist in the West Phoenix sett, and at a very shallow depth.

Resolved.—That the mine be proceeded with immediately, and that the utmost economy be observed in carrying on the works.

Resolved.—That a committee be appointed to carry such object into effect, consisting of Jeffery Lang, Esq., M.D., John Porter, Esq., Edward Suter, Esq., Mr. W. Milton, W. Whitcomb, Esq., Mr. Henry Vatcher, John Symons Higgs, Esq., Charles Richards, Esq., Mr. William Channing, Mr. W. Luxmore Jones, Robert Serjeant, Esq., Mr. Wm. Ballo.—the committee having offered their services gratuitously.

Resolved.—That an early day be fixed by the committee for closing the share list.

Resolved.—That the best thanks of the meeting be given to the chairman for his able conduct in the chair.

(Signed) JEFFERY LANG, M.D.

This invaluable mine adjoins the Phoenix, whose riches as a copper and tin mine now prove enormous. The lodes in the West Phoenix sett are parallel, and not far from the south and West Caradon Mines—the shares of the former originally cost £5, and now selling at £290; the latter £20, and now selling at £295. The two great cross-courses of South and West Caradon pass through this sett. The lode in West Phoenix sett is large, varies from 10 to 20 feet wide, strong and well defined, is the same lode as the Phoenix, and carries precisely the same indications. It is also ascertained that a rich course of ore now exists in the 13 fathom level, 14 inches wide, and worth from £90 to £100 per fathom. The small sum of £1150 has been paid for the sett, which will be reimbursed.

The accompanying reports, from Evan Hopkins, Esq., 13, Austinfriars, London, and Capt. Samuel Secombe, agent of the Phoenix Mine, demonstrate satisfactorily that the West Phoenix Mine is no speculation, but only requires capital to develop the riches which are positively known to be in this sett. The ground being easy, the work will be rapidly accomplished. Five hundred and fifty shares are only now issued to the public—the remainder of the 1024 are reserved to the owners of the mine, agreeably to the conditions of the Cost-book. The calls will not exceed £1 per share every two months, and it is estimated that before £7 or £8 per share is expended the mine will be in rich and profitable working. A 30-inch cylinder steam-engine has already been purchased. The mine will be worked with the strictest economy, under the superintendence of the best practical agents. A large number of the shares are already taken up.

Respectable parties willing to secure a few of the remaining shares are instructed to make early application, accompanied with a reference, to James Lane, Esq., 80, Old Broad-street, London; or to John Symon Higgs, Esq., 2, Chichester-place, Exeter.

OFFICES—14, HIGH-STREET, EXETER.

BANKERS—Messrs. Sanders and Co., Exeter; the Devon and Cornwall Banking Co., Exeter and Liskeard.

Report of Evan Hopkins, Esq.

This sett is situate at the south-west foot of the Cheesewring, in the Caradon mining district. The lodes passing through this property are the continuation of the Phoenix lodes westward; but as they leave the pale brown slate of the latter mine, and enter into the schistose granite of the Withybroke, they become more productive of tin than copper. The granite is here traversed by many soft channels of ground, and also by large veins of schist rock, which are more or less impregnated with tin. The lodes in this sett are intersected by the West Caradon cross-courses, and are of considerable magnitude, judging from the ancient superficial workings. Large quantities of rock, containing tin, may be extracted from this sett at a moderate depth, and probably a large amount of the black and grey copper ore also on the east side of the main cross-course. This mine should be worked in very wide excavations, as I think the lode will be found in numerous branches; and a more economical mode of tin dressing should be introduced, than the ordinary method employed in the county of Cornwall—by these means it may be rendered a very valuable property.

13, Austinfriars, London, June 28, 1850.

Report of Capt. Samuel Secombe, of the Phoenix Mine.

In compliance with your request, I beg to furnish you with the following report of the West Phoenix, or Withybroke, Mine, which is situate to the west of, and adjoins the Phoenix Mine—the strata of both mines is granite. The West Phoenix, or Withybroke, Mine sett, contains several known lodes; the greater part of them has been worked on, more or less, for tin, by the ancients; in one particular has been more extensively worked than the others, and which is a continuation of the principal lode in the Phoenix sett, and is precisely the same lode as the one proving so rich and productive for copper ore in that mine. It is a large strong lode, varying in dco from 10 to upwards of 20 feet wide, and very regular in its dip or underlay, which is south. This lode has been laid open, and very extensively worked near your eastern boundary, to the depth of 40 fathoms, and in these workings yielded large returns of tin, which was found chiefly in the capels of the lode. The gossan part of the lode in these workings is large, and contains small portions of copper ore, and presenting good indications that the lode will, when laid open to a reasonable depth, be found to contain large deposits of copper ores of rich quality. I have been informed that the deepest workings in this lode in your sett are only 14 fms. below the surface, and at that shallow depth the lode was found to contain large quantities of rich tin, but could not be followed, having no machinery to keep the workings drained. These old workings are now full of water and stuff, and cannot be examined until cleared up; but, judging from what can be seen of this lode in the Phoenix sett, and their contiguity to each other, I am fully persuaded that if the West Phoenix, or Withybroke, Mine be effectually laid open, it will prove to be a lasting and profitable mine, and one that will not require a very large amount of capital, if judiciously laid out.

Liskeard, August 31, 1850.

SAMUEL SECOMBE.

WANTED.—A MANAGING AGENT for a LEAD and COPPER MINE, of some magnitude, in CORNWALL: he must be intelligent and respectable, possess good practical mining knowledge, and an active disposition.—Applications, with testimonials, to be addressed to R. H. Pike, Esq., Camborne.

WANTED AN ENGINEER.—A steady Man, of temperate habits and good moral character, from thirty to forty years of age. He will be required to proceed to Spain almost immediately, and must be competent to WORK and KEEP IN REPAIR the ENGINE and MACHINERY at the LINARES MINES. Wages, £7 per month, on an agreement for the term of three years. Applications to be addressed to Mr. Eaton, No. 2, New Broad-street, London, to be accompanied by a reference for character and ability.

WANTED, BY THE MINING COMPANY OF THE CENTRAL PYRENEES, A RESPECTABLE PARTY, either to take the MANAGEMENT on behalf of the company, or to RENT their MANGANESE, and silver-containing LEAD ORE MINES. For particulars, apply to Graetz and Hermann, 3, Huggin-lane, Wood-street.

WANTED.—A Young Man, having a SMALL CAPITAL, and a thorough knowledge of Metallurgical Processes, is DESIROUS of an opportunity of EMPLOYING his MONEY and TIME in any SUITABLE UNDERTAKING. He is a good accountant and correspondent, and well acquainted with the German Language.—Address, "M. R. N." Post-office, Birmingham, or application may be made at the office of the Mining Journal.

DRAUGHTSMAN.—WANTED, in an IRON-SHIPBUILDING ESTABLISHMENT, one who has been accustomed to MARINE ARCHITECTURAL DRAWINGS, and is conversant with MATHEMATICS, will be preferred. Application to state qualifications, testimonials, and salary expected. Also, an ARTICLED PUPIL, who will have every opportunity of acquiring a theoretical and practical knowledge of the business.—Apply to James Pantom, 60, Gracechurch-street, London.

TO MINE AGENTS.—WANTED, for COOK'S KITCHEN

MINE, near CAMBORNE, CORNWALL, a MANAGING AGENT, who possesses a thorough practical knowledge of Mining, and who perfectly understands the Dressing of Tin, Silver, and Lead Ores. Salary Twelve Guineas a month.—Applications, with testimonials, to be addressed to Mr. Pike, Camborne, prior to the 29th inst.

SHARES IN A COPPER MINE ARE OFFERED TO CAPITALISTS ON ADVANTAGEOUS TERMS.—The Mine is situated in one of the most favourable districts in the West of England; is complete in all needful machinery, and will soon yield an ample return for the capital invested. Reference will be given to a mining engineer of the first eminence.—Apply to Messrs. Cornthwaite and Wilson, solicitors, 14, Old Jewry Chambers, London.

EAST EDMONDSLEY COLLIERY.—TO BE SOLD, OR LET, the CURRENT-GOING COLLIERY of EAST EDMONDSLEY, in the county of DURHAM, containing 174 acres, or thereabouts, held under leases, of which about 30 years are unexpired. The coal has been sold in the markets as "Gibson's Wall's-End" and "North Durham Wall's-End." The purchaser or lessee will be required to take the engines, &c., at a valuation, which will be of small amount.

For further particulars apply to Mr. William Barkus, viewer, Lowfall, Gateshead.

SEA SALE COLLIERY.—TO BE LET, and entered upon at Lady-day, 1851, all that CURRENT-GOING COLLIERY, called PERCY MAIN COLLIERY, in the manor of TYNEMOUTH, and county of NORTHUMBRIA, situated within two miles of the mouth of the River Tyne, and only half a mile distant from the shipping place.

This Colliery has Three Coal Pits, and an Engine Pit, with Engines, a Railway, Two Shipping Places, very convenient Workmen's Houses, and other Portions of a Colliery Establishment complete.

The royalty comprises an extent of nearly 1000 acres, and is being worked in the High Main and Benham Seams—the former of which yields a first-class Tyne household coal. The Benham Seam has been very partially worked; is 5 feet high, and is considered equal in section, produce, and quality, to any of the same seam in the neighbourhood.

The land held by the present lessees will either be let along with the colliery, or severed therefrom, as may be agreed upon.

For further particulars apply to Mr. Thomas John Taylor, Earsdon, near Newcastle-upon-Tyne; information may also be procured from the lessees' viewer, Mr. Thomas E. Forster, 7, Ellison-place, Newcastle, and from the agents resident upon the colliery.

Alnwick Castle, October 11, 1850.

MR. J. C. NESBIT, F.G.S., F.C.S., CONSULTING AND ANALYTICAL CHEMIST.

LABORATORIES—38, KENNINGTON-LANE, LONDON.

Mr. NESBIT gives PRIVATE INSTRUCTIONS in CHEMICAL ANALYSIS, and may be consulted on subjects connected with the Composition, Working, or Assaying of Minerals.—Analyses of Minerals, Slags, Soils, Manures, &c., &c., performed as usual, on moderate terms.

MINING.—COMPANIES of respectability requiring OFFICES for CARRYING on their AFFAIRS in LONDON, including MANAGEMENT, may be ACCOMMODATED on application to Mr. FENTON, No. 5, WHITE HART-COURT, LOMBARD-STREET.—SHARES ON SALE in those well-known dividend-paying Mines, South Caradon, Providence, Spearhead Consols, Carn Brea, Wheal Rees, &c., and a FEW for DISPOSAL in those promising adventures Wheal Arthur, Wheal Oak, Warleggan Consols, South Belistan, &c.

MINING OFFICES, No. 9, ST. MICHAEL'S-ALLEY, CORNWALL, CITY (established 20 years).—WM. TRENEY begs respectfully to inform the Public that he is at all times in a position to BUY or SELL SHARES in most of the DIVIDEND-PAYING MINES; and being a native of Cornwall, he is always ready to give the best information respecting mining property in general.

MINING PROPERTY.—Messrs. BROWN, FULLER, & CO., 48, THREADNEEDLE-STREET, LONDON, beg respectfully to inform the public that they are at all times in a position to BUY or SELL SHARES in all the DIVIDEND-PAYING MINES, and have on hand South Carn Brea, Wheal Spry, Wheal Russell, &c.—Oct. 18, 1850.

MINING PROPERTY.—BUSINESS transacted in every description of MINING PROPERTY, SHARES BOUGHT and SOLD, ADVICE GIVEN TO PARTIES as to INVESTMENT, ADVANCES OF MONEY MADE on this DESCRIPTION OF PROPERTY, Statistics given on Mines, and the earliest information obtained from the mineral districts.—Apply to DURRANT & CO., Mining Sharebrokers, 48, Lombard-street.

MINES.—MOLYNEUX & CO., 6, FINSBURY-PLACE SOUTH, and 6, WEST-STREET, FINSBURY-CIRCUS, have SHARES FOR SALE in DIVIDEND-PAYING and OTHER MINES, which will ensure to capitalists the safest and most unexceptionable investment.—Office hours from Ten to Five o'clock.

MR. R. SYMONS, LAND AND MINERAL SURVEYOR, OFFERS his SERVICES to SURVEY and PREPARE accurate PLANS and SECTIONS, and SURFACE MAPS, of MINES; also to INSPECT and REPORT on MINES in DEVON and CORNWALL.—Resident in the midst of the best mining locality at present known in the world, Mr. Symons is in possession of the most recent and correct information as to the state and prospects of the Cornish Mines in particular, and is ready to communicate such information as is requisite to give a right direction to the spirit of enterprise in this most important branch of industry.

Address, either Truro or Camborne, Cornwall.—Camborne, October 14, 1850.

MANUEL AND CO., MINING AGENTS, are instructed to SELL in the following DIVIDEND-PAYING MINES:—South Frances, Wheal Seton, Treviack, South Bassett, &c., also in other mines, including—Russell, Rannaford, Coombe, Exmoors, &c.—Office, 42, Fish-street-lane, London.

MR. R. TRIPP, MINING AGENT, has for SALE SHARES in most of the best DIVIDEND-PAYING MINES, and others, including—Devon Great Consols, West Caradon, South Caradon, Botallack, Wheal Margaret, Alfred Consols, Wheal Tremayne, Treviack and Barrier, North Pool, Condurrow, Tincroft, Tamar Consols, Wheal Treacoll, Henneock, Treville, Wheal Penhale, Cartwright Consols, Spearhead Consols, West Wheal Treasury, &c.—FORKY: Butta Butta, Linares, Santiago, United Mexican, Cobre, &c.

MINING AND SHARE OFFICES, ST. MICHAEL'S CHAMBERS, ST. MICHAEL'S ALLEY, CORNWALL, LONDON.

MESSRS. BOXALL & CO., MINING SHARE DEALERS, 5, CROSBY HALL CHAMBERS, BISHOPS-GATE-STREET.

CREFT AND CO., 1, ROYAL EXCHANGE BUILDINGS, LONDON, can always BUY or SELL every description of MINING SHARES. WANTED, Peter Tavy and Mary Tavy shares, for which a large premium will be given.

JAMES LANE, MINING SHARE DEALER, 80, OLD BROAD-STREET, LONDON.

MINING COMPANY OF WALES.—PROSPECTUSES, containing REPORTS on the MINES and QUARRIES of the COMPANY, Terms and Conditions for its Government, &c., may be had of ST. PIERRE FOLEY, Secretary, to whom letters on the allotment of shares, and on the general business of the Company, are to be addressed.—Office, 54, Lincoln's Inn-fields, London.

CRYSTALLOGRAPHY—PROFESSOR TENNANT'S LECTURES.

Prof. TENNANT delivered the second of his course of lectures this season to the students of King's College, on Wednesday. He commenced, by remarking that of the physical properties of minerals no one was so important in itself as that by which crystals or regular solids were produced. To investigate and describe these solids was the object of crystallography, and constituted, without doubt, the most interesting branch of mineralogical research. Crystallisation, in the most limited meaning of the term, was that process by which the particles of bodies united in such a manner as to produce determinate and regular solids. It was equally true, that those minerals which possessed a foliated or fibrous structure were the products of crystallisation, under circumstances which had rendered the process more or less imperfect, and prevented the appearance of distinct and regular forms. For instance, if a quantity of muriate of soda or common salt was dissolved in water, and the solution was permitted to evaporate slowly by a moderate heat, or, indeed, without the application of artificial heat, the particles of salt would separate from the water, unite, and form very small cubes, which would float on the surface until they aggregated weight caused them to sink. Other particles would continue to accumulate around them, until they formed minute cube-shaped crystals. This was crystallisation under favourable circumstances. Other substances, however, were crystallised in like manner, and produced regular solids, though, possibly, of a different form. Rock crystal, for instance, was a crystal presenting the form of a hexagonal prism; the topaz a rhombic prism; the garnet a dodecahedron, with rhombic faces; the diamond frequently an octahedron and its modifications.

The ancients believed crystallised quartz, or rock crystal, to be water congealed by exposure to intense cold, and accordingly applied to it the term *crystallos*, which signified ice—hence the etymology of the word crystal; and, as a beautiful regularity of form was one of the most striking properties of crystallised quartz, the name crystal had been extended to all mineral and other organic substances which exhibited themselves under the form of regular geometrical solids. A crystal might, therefore, be defined as an inorganic body, terminated by a number of plain and polished faces. The corresponding faces of all crystals which possessed the same variety of form, and belonged to the same substance, were inclined to each other in angles of a constant quantity. This constancy of angles remained even in those cases where the faces themselves, from mere accidental causes, had changed their dimensions or number of sides. Although many crystals possessed transparency in a greater or less degree, it was not a necessary property. Plain surfaces, on the contrary, bounded by right lines, were so essential to the crystalline character, that their absence indicated most decidedly an imperfection in the process of crystallisation. The peculiar law of crystallised minerals, by which they had always a constancy of angles, was discovered by M. Hüy, who, when carrying a specimen of spar across his room let it fall; it was, of course, broken into a great number of pieces, and in gathering the fragments together, he observed that they all had one particular measurement. He immediately collected a great number of specimens of other substances, broke them, and found the same result. Calcareous spars, whether from Derbyshire or any other part of the world, presented a rhomboid on being broken, in every fragment, no matter how minute. Fluor-spar was presented in Nature in crystals of different form, but they were always reducible to the octahedron, the tetrahedron, and the acute rhomboid, and the octahedron had been selected as the primary form. The term "primary form" did not, however, imply that it was the form in which it was first produced; it was an arbitrary term, which would be better expressed by the phrase "cleavage form." Taking fluor-spar as his example, the lecturer then proceeded to show the form it took. If it was immersed in hot water, a little cracking noise would be heard, and it would then separate with ease in its cleavage planes. In digging foundations in the London clay, long and perfectly white crystals of sulphate of lime were found, and these, instead of breaking most readily where mechanically they appeared the weakest, they would only divide longitudinally. These crystals were sometimes found crossing each other at right angles, and in other directions; and, in the neighbourhood of Paris, the same substance was found lying, each crystal in exactly the reverse direction of that of its neighbour, and it was from this circumstance called "arrow headed gypsum," the two crystals, when side by side, having something of the appearance of arrow heads. These eccentricities, so to speak, of Nature, were very puzzling to young beginners. The lecturer then exhibited numerous diagrams, which showed the different shapes crystals would take in their transition from one form to another, all being geometrically deducible.

The lecturer next spoke of chemical affinity, which was of two kinds—homogeneous and heterogeneous—the former uniting particles of the same kind, and the latter particles of different kinds, from which it was evident that the production of a crystal essentially depended upon the action of the homogeneous affinity. Whenever crystallisation took place, it was an essential prerequisite that the materials should have been in a fluid state. Many metals—as bismuth, for instance—became crystalline by fusion. By solution, the particles of the body to be crystallised were reduced to a state of minute division, were separated from each other, and capable of being moved in the solvent with perfect freedom. As solution took place by the action of the heterogeneous affinity, it was evident that, so long as it continued to act with undiminished force on the particles of the dissolved body, no crystallisation could be effected. It was, therefore, necessary to diminish the force of heterogeneous affinity, and to cause the dissolved particles to approach each other, still permitting them to move freely and moderately among themselves. This might sometimes be effected by simple cooling, as in the case of metals; but in crystallising other substances, as most of the salts, slow evaporation was necessary. The lecturer then referred to some admirable specimens of crystallisation which he had prepared, and which were exhibited. Sulphate of soda had produced white crystals, of the form of an oblique rhombic prism; and the sulphate of copper was of a beautiful blue, and exhibited a different crystalline form. In another vessel the octahedron crystals of alum were exhibited at the bottom, and upon them very fine long prismatic crystals of nitre were displayed. In a third vessel the sulphate of iron and sulphate of copper had been united together, and had produced oblique rhombic prisms. The lecturer then described the mode of obtaining crystals from alum, as an experiment which the students might themselves try without much expense; and showed how easily a knowledge of the principles of crystallisation explained specimens which had foreign substances in their centre, remarking particularly upon a specimen of crystal quartz in the British Museum, which had five distinct deposits of chlorite within it. It was obvious that to produce perfect crystals the solvent must be free from external agitation, and sufficient in quantity to permit the particles to move and to arrange themselves in the requisite order without disturbance. When these conditions were not complied with, imperfect crystals were produced. Indeed large, and at the same time perfect, crystals were rather uncommon; and it would mostly be found, when examined by the goniometer, that the smaller the crystals the more perfect would their faces be. The geometrical forms which crystals exhibited must depend on regularity of form in the particles which composed the crystals, and on a determinate arrangement of these particles at the moment of combination. The particles he now spoke of were those into which the body was reduced by solution, and were called integrant particles; but mere solution did not produce decomposition, hence there were in bodies two kinds of particles, integrant and elementary. Integrant particles were the smallest particles into which a body could be divided without decomposing it, and elementary particles were those of which integrant particles were composed. Elementary particles, in fact, were the final results of chemical analysis, and must vary with the progress of chemistry. In bodies really simple the integrant and elementary particles were the same. Elementary particles must, however, possess a regularity of form which was constant in the same simple substance.

It was obvious, then, that a mineral was an assemblage of particles, and that it increased in size merely by the juxtaposition of similar integrant particles. It depended upon no interior mechanism, like organic bodies, for its growth; but it was enlarged in its dimensions by the application of successive layers of particles. The integrant particles were believed in the same substance to possess the same form and dimensions; but they did not, as might have been expected, always combine in the same manner. It was true there were many bodies which had a determinate form, under which each of them most frequently appeared. Thus, muriate of soda presented a cube, and rock crystal a six-sided prism. Sulphate of lead formed a cube and an octahedron just as often; while more frequently than either it was found in some form between the two, in which the faces of the two forms might be found in the same figures. If crystals of sulphate of lead, however, were broken, they would always resolve themselves into cubic particles. After dwelling at considerable length upon the results of difference of arrangement in the integrant particles, in the course of which he familiarly illustrated some of his remarks by an exhibition of the crystals of barley-sugar, and mentioned the recent improvements in the manufacture of lump and crystallised sugars, by which it was now crystallised in a vacuum, instead of being burnt—a diminution of the pressure of the atmosphere being found highly favourable to crystallisation, a fact which accounted, perhaps, for the greater perfection and size of crystals formed in deep veins in the earth's crust—the lecturer directed the attention of the students to a tabular exhibition, compiled from different sources, of the results of the different systems of crystallographers, adopted by Rose, Brewster, Herschell, Brook, Miller, and others; and illustrated them with numerous ingenious models constructed of pasteboard, glass, and wire.

The lecturer concluded by briefly explaining the mode in which the specific gravity of minerals was found. The practice was first to weigh the substance in air, and then to immerse it in water, when it would be found to weigh considerably less, and the original weight divided by the difference would be the specific gravity. These who wished to be particularly accurate must ascertain the temperature of the water; but for practical purposes, water at the ordinary temperature would be sufficient. He then exhibited a number of cry-

stalline, of exactly the same circumference, arranged by Prof. Faraday, which exhibited, at a glance, the different specific gravities of different metals by their length. Platinum had the greatest specific gravity, and was, consequently, the least; gold next; then, in a nearly regular gradation, lead, mercury, silver, bismuth, copper, iron, tin, and antimony; and then sodium and potassium, the two last being, at least, 20 times the bulk of platinum. [The next lecture will relate to quartz and siliceous minerals.]

LIFE ASSURANCE FOR THE MILLION.

We have had to notice literary "food for the million," and public benefits in other forms, made accessible to the many. All such attempts are laudable. We have now to commend a bold and novel attempt to afford the advantages of Life Assurance to the million—that is to say, to the millions of railway travellers. For a man to be informed that, by paying threepence in the first-class he could insure to his family 1000*l.*—for *twopence*, in the second-class, 500*l.*—and for *one penny*, in the third-class, 200*l.*, in the event of his death by railway accident, or a commensurate award for personal injury, would be almost playing upon his credulity. At the first blush of the proposal, it must, no doubt, appear to many an *argumentum ad absurdum*. On the contrary, it is a positive fact that such assurances are to be obtained through the medium of the Railway Passengers' Assurance Company; and many are the witnesses to the truth of the seasonableness of the donations granted by this company in cases of railway accidents. The company has been in existence only a twelvemonth, and yet from their *premiums* they exhibit, in their annual report, an income of nearly 4000*l.* for that period. What has the company done in return? Why, the report states that 37 cases have been applied for compensation. One of them was awarded 210*l.* (his eyes being permanently injured); a second 42*l.* (much scalded and hurt); another 35*l.* (man and wife, seriously hurt); a fourth 30*l.* (an engineer, proceeding to Canada); and several minor sums, even for loss of time through these accidents. Thus, the company has been tested, and the integrity of its promoters has been promulgated. Looking at the immense number of travellers amongst the middle and working classes of the country, it is to be hoped that the taking out of an assurance ticket will become a regular habit with all, to provide against the serious consequences of death or accident; for at present no action can be maintained against a railway company by a surgeon called in by a railway servant to a passenger who may be injured. This is one reason for those classes supporting this useful institution; and another is, the *reasonableness* of a few hundreds of pounds in cases of death, and of pecuniary compensation for accidents to the majority of the middle and working classes of railway travellers. Many may object to avail themselves of such an institution, in spite of the cost being so inconsiderable, and the tickets to be had at almost all the railway stations. One may be such a fatalist as to say—"Look at the millions who travel without accident; I shan't trouble myself about a ticket." But what does the Scripture say—"Take heed, for thou knowest not what the morrow may bring forth." A second, finding himself happily at his journey's end, may ejaculate—"My pennies are gone." Now, let this man be ever so parsimonious of his pence, he cannot say that have been thrown away, for he must know that his premium will go to that fund which is to relieve others not so fortunate as himself; and this must be a pleasing reflection to all Christian and philanthropic persons, for most of them would give such a trifling amount to a deserving object in a public thoroughfare. Another man, negligent of his own and family's welfare, might say—"I don't like the idea of insuring," as if (to use the words of the secretary of the company) *provision against a possible danger made that danger more certain or imminent*. After speaking of the useful and philanthropic nature of the company, and the support it deserves from the travelling public of this great trading country, we cannot do better, to insure their perfect confidence in the management, than exhibit thus prominently the names of the directors and officers of the Railway Passengers' Assurance Company as follows:—

Directors: Chairman, John Dean Park, Esq., 217, Strand; deputy-chairman, George Berkeley Harrison, Esq., 24, Great Tower-street, City; Humphrey Brown, Esq., M.P., Twining-park, Tewkesbury; James Clay, Esq., M.P., 25, Montague-square; George Olive, Esq., Sandstead-court, Croydon; Samuel Whitfield Daikes, Esq., 14, Whitehall-place, Westminster; Harvey Morton Farquhar, Esq., 16, St. James's-street; Alexander Greig, Esq., Lowndes-street, Belgrave-square; the Hon. Arthur Kinnaird, Pall-mall East; George Robert Paul, Esq., Portland Lodge, Worthing. Bankers: Messrs. Strahan, Paul, Paul, and Bates, 217, Strand; Messrs. Ransom and Co., Pall-mall East. Standing Counsel: Henry Davison, Esq., Brick-court, Temple. Solicitors: Messrs. Fry and Holt, Walbrook House, City. Surgeon: Barnard Wight Holt, Esq., F.R.C.S., 5, Parliament-street, Westminster. Secretary—Alex. Beattie, Esq.

NEW PATENTS.

SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

G. H. PHIPPS, Park-road, Stockwell, engineer: For improvements in propelling vessels. The improvements claimed under this specification are—1. The forcing of sterns to vessels so as to be propelled by a screw or screws, so that the upper portion of the stern is made to overhang or project over the lower portion, whereby all horizontal lines from the bottom of the vessel to the level of the top of propeller will converge to a vertical line in advance thereof, and all horizontal lines above the level of the top of the propeller will converge to a vertical line further aft than the extremity of the same. The advantages assumed to be derived from this construction (which may be familiarly illustrated by supposing a vessel to be cut in two longitudinally and horizontally, and the upper portion slid along so as to project beyond the lower half) are—1. To obtain the smallest amount of resistance from minus pressure at the stern, hence securing more solid water for the screw or screws to act in, as regards all the water on a level therewith.—2. To obtain a clear run of all the water above the level of the propeller to the rudder.—3. To obtain as small an abstraction as possible from the buoyancy of the vessel, in consequence of diminished displacement.—4. The power of elevating or depressing screw propellers by any means whatsoever, so as to work the screw at any required altitude. The machinery employed for working the propeller is in this, as in the former instance, that of ordinary construction; but to allow of the shaft being elevated, it is united to the driving power by a universal joint, and the elevation is effected by means of a screw turned from the deck of the vessel, and attached by slings to a collar on the propeller shaft.

E. A. CHAMBERLAIN, Paris: For improvements in the manufacture of boilers, and of pipes of malleable substances as well as of elastic matter. Mr. Chamberlain claims—1. A machine for rolling metal tubes, by which they may be formed of any bore and thickness of metal. This machine consists of two rollers, one of which has at each end a ruff or collar, and at the other a corresponding part cut away. A hollow cylinder of metal is introduced between these rollers, and after being sufficiently reduced by successive rollings, by which it acquires the form of a double plate connected at the edges, a tapering mandril is inserted between the surfaces, whereby the metal is opened out and forms a tube with a longitudinal rib on each side. In this state the tube can be applied to various useful purposes, such as supplying gas or water.—2. A machine for rolling tubes or other forms, which is described to consist mainly of a series of conical rollers, having one part of their circumference with a cam surface arranged round a mandril, over which is placed the metal to be operated on. Rotary motion is communicated to these rollers, and the sliding frame supporting the mandril is moved along the rollers, the rollers being of such length and thickness as to remove the tube easily from the mandril, it is passed between conical rollers, and thereby loosened.—3. The formation of tubes and other forms by rolling the material under operation between metal bars, which have a traversing motion, to and fro, imparted to them by suitable cranked gearing.

J. TURNER, Birmingham, engineer, and J. HANDWICK, of the same place: For a certain improvement or certain improvements in the construction and setting of steam-boilers. Claims.—1. The causing a current of heated air to pass across the interior portion of a steam-boiler through one or more flues; also the contraction of the fire-place immediately below the man-hole, so as to give greater room for the entrance of a man for the purpose of cleaning out the boiler.—2. A particular method of setting steam-boilers, so as to have flues passing under and around the boiler, which flues are so arranged as to divide the current of flame and heated air, whereby a more equable distribution thereof over the surface exposed to heat is obtained.

C. DE BERGUE, Arthur-street, London, engineer: For certain improvements in locomotive and other steam-engines, also in buffers for railway purposes. Claims.—1. The application of a small piston or pistons for communicating an expanding motion to the rings of metallic pistons, whereby a certain amount of pressure on the expanding ring may be ensured and regulated by the size of the small pistons.—2. An arrangement for relieving the cylinder from a portion of the weight of the piston, by cutting away a portion of the junk ring, and allowing the piston to rest principally on the metallic packing.—3. A peculiar arrangement and combination of the parts of buffers. This improvement refers mainly to an improvement on a station buffer formerly patented by Mr. De Berge.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

G. Michie's, of London, gentleman, for improvements in treating and preparing potatoes for seed.
J. Fowler, Jun., of Melksham, Wilts, engineer, for improvements in steam-engines in raising and forcing fluids in irrigating and draining land, and in machinery for cutting wood for drain pipes and other uses.
D. T. Shears, of Bankside, Surrey, copper merchant, for improvements in the manufacture and refining of sugar.
J. E. Johnson, of Crawford-street, Chemist, for improvements in fixing colours on fabrics made of cotton and other fibres.
J. H. Baddley, of Shelton, Stafford, engineer and designer, for improvements in the manufacture of ornamental articles of earthenware.
T. R. Harding, of Lille, France, manufacturer, for improvements in machinery for heckling and carding flax in machinery for combing and drawing wool and other fibrous materials, and in machinery for making parts of such machines, and for a new arrangement of the steam-engine for driving flax and woolen mills, which arrangement is also applicable to other purposes where motive power is required.
H. B. Barlow, of Manchester, consulting engineer, for improvements in spinning cotton and other fibrous materials.
J. Young, of Manchester, manufacturing chemist, for improvements in the treatment of certain bituminous mineral substances, and in obtaining products therefrom.
J. H. Williams, of Birmingham, manufacturer, for certain improvements in the manufacture of buttons.
DESIGNS FOR ARTICLES OF UTILITY REGISTERED.
L. Duitrell, Wellington-street, Strand, plant-form, or instrument for measuring the feet of horses for facilitating shoeing.
M. Gardiner, Ashill, near Watton, lever spring-drop.
J. Gray, and R. J. Keen, Liverpool, anti-vibration elastic compass dial.
J. Smith, Uxbridge, revolving sifter.
T. S. Freeman, Fenchurch-street, safety pocket for waistcoats.
G. Reinhardt, Hamburg, economical registered stove.—*Mechanics' Magazine.*

FOREIGN INTELLIGENCE.

AMERICAN LEAD TRADE.—New York advices supply a statement of the shipments of lead from the Upper Mississippi mines during the last four years, commencing with September and ending with August in each year. It may be noticed, that no shipments are ever made in January, and but rarely in December and February, the navigation generally closing in the latter part of November, and opening early in March. The statement is as follows:—

	1846-7.	1847-8.	1848-9.	1849-50.
September	58,869	73,357	62,947	46,798
October	71,602	56,335	69,170	74,207
November	28,436	67,514	40,069	65,149
December				5,471
March	24,656	47,316	38,625	52,811
April	73,150	44,467	71,184	81,579
May	119,415	110,558	84,473	88,830
June	185,021	98,128	101,090	96,021
July	107,918	88,556	77,004	59,756
August	65,080	70,538	66,345	40,000
Total pigs	764,077	706,849	611,817	592,120

It will be seen that the production of lead from this quarter has undergone a progressive and considerable decline during the last four years. The shipments up to the 7th September this year are 80,020 pigs, against 51,552 during the same period of 1849.

The mines near Little Rock, Arkansas, continue to prove extremely rich in the argentiferous lead ore. Since May upwards of 150,000 lbs. of mineral have been raised, most of which has been prepared and sent forward to market. The mining operations will, for the present, be confined more immediately to sinking the main shaft at the diggings (which is now 90 feet) through the black state which is found at this depth. It is the determination of the company to increase their force, and vigorously prosecute the work. During the previous week another extensive vein of mineral had been discovered, which promises to remunerate the proprietors liberally for all outlays.

THE "BLACK-LEAD" IN NEW BRUNSWICK.—The St. John's Mining Company are now successfully working their recently discovered mine, and their prospects are said to be extremely encouraging. Seven persons are now employed in extracting the lead from the vein, which is simply done with a pick and hammer; they get out about 40 barrels per day, and since the company have been in operation (about four weeks), they have taken 900 barrels, 400 of the first quality, and 500 of the second. It is thought this lead will realise the company about 2*l.* per barrel; and should this expectation be met, the six individuals composing the association will probably make handsome fortunes. The *Courier* states its belief that "the only thing which can prevent it turning out a very lucrative speculation will be the want of a sufficient market for such large quantities as can be taken from the veins, as the celebrated Borrowdale Mines in England are only opened at limited and stated periods on this account, to prevent the markets from being overstocked." The company have secured the right to carry on their operation for 25 years, to the extent of three square miles in that locality, by paying to the Government the usual preference price of 5*l.* per mile, and 4 per cent. on their produce.

CALIFORNIA.—News from San Francisco to the 1st Sept. has been received, and which is more favourable than any which has previously come to hand. The accounts from the gold regions are most encouraging, and peace had been quite restored at Sacramento City.

Accounts from Washington, announce that Col. Fremont's measure to regulate the gold mines of California (an abstract of which appeared in last week's Journal) had passed the Senate.

OPERATIONS AT THE MARAPOS GOLD MINES, CALIFORNIA.—We have just had an interview with W. A. Jackson, Esq., who this morning arrived from the Marapos mining establishment, where operations have been very successfully commenced in the quartz formations. The vein has been opened and explored by this company for the distance of 200 or 300 feet; it is from 6 to 8 feet wide. Explorations have been made near the centre to the depth of 30 feet, and the ore has increased in richness to that depth, showing more of the decomposed description, and the shale formation. The course of the vein has been laid open and examined on the surface, and to the depth of 18 feet. It presents the appearance of a regular ledge. The company have projected a tunnel from the ravine to the lead of the vein, so as to cut it at the depth of 100 feet from the surface, which will give the company the whole lode of ore through all seasons of the year. The property has been acquired in such a manner as to preclude the possibility of the assertion of any adverse claim, and must be regarded as one of the greatest properties, except the quicksilver mines of New Almaden, yet acquired in this country. They pay Fremont 4 per cent. The specimens brought down by Mr. Jackson, and lodged with Messrs. Palmer, Cook, and Co., are the richest we have ever seen.—*San Francisco News*, Aug. 15.

ESTIMATE OF THE PROBABLE YIELD OF THE MINES OF CALIFORNIA.—It is estimated that up to this time full \$150,000,000 in gold dust have been exported from California, of which nearly 28,000,000 have been received at the United States Mint, and probably \$2,000,000 worth of gold dust still remains in the hands of individuals, or has been used for the manufacture of jewellery and other trinkets; making an aggregate of \$90,000,000 worth of gold dust received in this country. A large amount of gold has been taken to Oregon and Mexico, direct from the mines, without passing through San Francisco; a large amount has been shipped from San Francisco to Panama, Valparaiso, Calico, and other Pacific ports, on English account; and the estimates of a gentleman just returned from California put down the total production, up to the 15th August, 1850, at \$150,000,000. The same authority estimates the production of the mines, for the year ending Sept. 1st, 1850, at \$200,000,000. This is enormous, and the effect of such a stupendous accession to the gold currency of the world must be immense. But a small portion of it has as yet found its way into the channels of commerce. The gold dug from the placers of California is distributed over the world, and it will yet be some time before it will be very sensibly felt. The impetus which has thus far been given to public and private credit, the inflation already realised in prices for nearly every species of property, the confidence entertained relative to the future, and the fearlessness with which all enter into mercantile engagements, are the results of the great and steady increase of capital, and the accumulations, at certain points, of the means necessary to carry on the most extensive commercial transactions. No apprehensions exist relative to the future. No one seems to doubt, for a moment, that the facilities for conducting trade will be equal to any legitimate demand, and there is consequently no restriction of credit, no fear of an immediate revulsion.

THE WORTHING COPPER MINE.—In the course of a trip to the south last week, we paid a visit to this mine, and were kindly shown over it by Mr. Hall-lett, the resident-manager, and Capt. Richards. The Worthing estate consists of about 900 acres, on the sea coast, about 12 miles from town. It is intersected by a stream of excellent water which runs the whole year. At the mouth of this stream is a small bar harbour, sheltered from the prevailing winds, which could, at little expense, be made to accommodate a considerable coasting trade. The lodes cross the country in a direction from north-east to south-west. We traced one of them for two miles, along the greater portion of which the ore, principally carbonates and pyrites, with a mixture of grey ore, cropped out on the surface. A very large lode, containing a considerable quantity of ore has been laid open about a mile from the harbour. Near this a whim has been erected, which will be in operation in the course of a month. Having observed the inclination of the lode, Capt. Richards proposes to drive a shaft so as to meet it at 30 fms., when he expects to come upon a large mass of ore. Our readers are aware that the mine belongs almost wholly to a company in London. They are conducting their operations in a regular and scientific manner, which entails considerable expense at first, but will, if the mine turns out as it promises, be amply compensated by the facilities given at a future stage to the raising of ore. There are several lodes, the courses of which can be traced on the surface, but operations have at present been confined to one which is considered the champion. On this shafts are being sunk at several places, and ore, though not in quantity, has been obtained in all of them. The hardness of the country greatly retards the operations in some parts, but there are good hopes of an improvement in this respect. None of the shafts are deeper than 9 fms., which is above the water line. Some very substantial miners' cottages have been built, and we saw the parts of a large steam-engine which is about to be erected. The castings of this were very superior. Altogether we were convinced that the Worthing workings embrace a decided mineral country, and so soon as the mine has been properly opened it bids fair to prove one of the most valuable in the country.—*South Australian*, May 9.

The *Monitor* publishes a decree of the President of the Republic, reducing the export duty on cast-iron from 25 centimes to 1 centime the 100 kilogrammes.

Accounts from Algeria mention that the exploration of the metallurgical resources of the colony continued to attract attention. The discovery of copper would, it was believed, lead to the opening of a profitable branch of industry.—*Times* of yesterday.—[We elsewhere notice the arrival of the first cargo of copper ore from Algeria for sale at Swansea.]

IMMENSE CASTING.—A large party assembled at Messrs. Stillman and Allen's Novelty Ironworks, to witness the casting of the plate of the *Humboldt*, steamship, intended to ply between New York and Havre: it is of the largest size, being 30 feet 4 inches long, 9 feet wide, and 7 feet 4 inches high, including the condenser, for a 95-inch cylinder, of 9-feet stroke; the same size as the engines of the *Atlantic*. About 40 tons of metal were used in the casting, which occupied a minute and a-half. At these works is also the mould of an 85-inch oscillating cylinder, of 9-feet stroke, which will be the first of the kind constructed in the United States, designed for a new steam-ship of Aspinwall's Pacific line, building by Mr. Webb; and the mould for the cylinders of the engines of a Charleston steam-ship, of the same size as the *Northerner*.

Messrs. Fox and Henderson, the contractors for the completing of the Cork and Brandon Railway, have been declared contractors for making the wire rope of the electric telegraph to be laid down between England and France.

TREATMENT OF COPPER ORES.—No. III.

By JOHN MITCHELL, Esq., F.C.S., author of a *Manual of Practical Assaying*, &c. &c.

The chief characteristic of the Welsh method is the facility offered for the rapid and sure working of all the ores and cupriferous products which mining or industrial art can furnish; no other process appears to possess this peculiarity, and to be so well adapted to the continuous extraction of copper contained in substances unexpectedly and continually varying in per centage and chemical composition. This method, considered in its minutest details, is not identical in all smelting-works; there exist slight variations either in manipulation or in the form of apparatus, according to the skill or the peculiar ideas of the manager, the period at which the works were established, the nature of the ores worked by preference, or the quality of the product required. Many modifications of apparatus and special processes have been tried during the last 20 years, and have often given rise to favourable opinions, which, however, after a time have not been confirmed, in consequence of which they have been for the greater part abandoned; some, however, are still employed in certain works, owing to some favourable circumstance which does not exist in other establishments. At present, however, it is not intended to enter into any descriptive details, or to offer any remarks on the various patented processes, as before describing the ordinary method it would be premature. In the last paper a summary of the treatment of ores in general was given; there are, however, other operations not there mentioned, such as the treatment of rich slags and other cupriferous products, occurring in a copper smelting-work. The introduction of these matters, of course, complicates the method of working, which, however, may be thus expressed. In juxtaposition with the numbers which represent the order in which the operations are described, are the letters of the preceding analysis, establishing a relation between their operations and those practised on the continent.

- 1 a. *Calcination of the Ores*.—Calcination of sulphuretted ores of poor and medium per centage with pyritous gangue.
- 2 A. *Melting for Coarse Metal*.—Melting of poor ores, crude and roasted.
- 3 B. *Calcination of Coarse Metal*.
- 4 d. *Melting for White Metal*.—Fusion of calcined coarse metal with rich ores.
- 5 b. *Melting for Blue Metal*.—Melting of calcined coarse metal with calcined ores of medium richness.
- 6 c. *Remelting of Slags*.—Fusion of rich slags from operations 4, 7, and 8.
- 7 c. d. *Roasting of White Metal*.—Manufacture of extra white metal, or roasting of blue metal.
- 8 d. *Roasting for Regulus*.—Roasting of extra white metal.
- 9 C. *Roasting*.—Manufacture of black copper, or roasting of ordinary white metal and regulus.
- 10 D. *Refining and Toughening*.

When treating of the continental methods, it will be seen from the letters characterising the above manipulations, six only of the ten belong to the continental processes—the other four being peculiar to Wales. Each of the three operations, under the head *roasting*, consist of a calcination and a fusion. This intimate association of two operations, executed elsewhere separately, and in a distinct apparatus, is a great peculiarity of the Welsh method. A 10th operation, No. 6 z—the re-melting of rich slags of many other operations—has no analogy among the continental processes. It has two principal objects. In the first place, it allows the extraction of the copper from slags, which, owing to the nature of the process of smelting, must be rich in that metal; secondly, the quality of the copper thus produced is superior to that obtained from the ores themselves. The causes of this singular phenomenon will be explained when the operation itself is described.

All copper ores and cupriferous products may be subdivided according to their nature, their per centage, and the uses to which they are destined, into seven classes—six comprising ores, properly so called, and a seventh containing all kinds of substances holding copper, which have been produced either in the smelt-house itself or elsewhere. The *first class* includes ores the per centage of which varies from 3 to 15, and which, after having undergone the calcination, 1, are submitted to the melting, 2. The ore, properly so called, is made up of copper pyrites, associated with small proportions of oxide of copper. The gangues contain, besides quartz and other earthy matters, a very considerable proportion of iron pyrites. Besides these elements, there often exists a notable amount of noxious substances, which specially influence the succession of the 10 operations. This class of ores is generally derived from home mines. The *second class* comprises ores which are also submitted to the calcination, 1; after which they are employed in the melting, 5, with substances already enriched by previous treatment. They have nearly the same composition as those of the first class, with this difference, that the proportion of copper, in comparison with the gangues, is much greater. The per centage generally runs from 15 to 25.

The *third class* are all those ores which are worked in the melting, 2, without previous calcination. In this melting they are mixed with calcined ores of the first class, in comparison with which they contain a much larger proportion of oxidised cupriferous matters; and in the gangue, which is essentially quartzose, there is very little pyritous matter. The per centage is between 12 and 20.

The ores of the *fourth class* play a very important part in the treatment. They are principally composed of various oxidised cupriferous substances (sub-oxide, black oxide, carbonate, &c.); they also contain much sulphuretted copper, with a small proportion of copper pyrites, peacock copper, or other like kinds. The gangue is essentially made up of quartz and oxide of iron, and nearly free from pyrites. The per centage varies from 25 to 45. The *fifth class* comprises the small quantity of sulphur ores employed in the melting, 6, where they serve as a concentrating agent for the copper reduced from the slags, for which this melting is specially intended. These ores must fulfil certain particular conditions. The sulphurous matters of which they are essentially composed must be absolutely free from injurious substances, in order that their addition may in no way tend to alter the superior character of the copper produced in this operation. These ores are composed of copper and iron pyrites with quartz. The per centage of metallic copper varies from 10 to 15—that of sulphur from 18 to 24.

The *sixth class* is exclusively composed of rich ores, free from sulphuretted iron, and other noxious matters. The cupreous portion is essentially sulphuretted copper, or furnace products of the same composition, imported from Chili, and known as *regulus*. In the same class is also found sub-oxide and native copper, and oxide of copper, combined with silica and carbonic acid. The gangue is principally quartz. The per centage of copper varies from 60 to 80.

The furnace products constituting the *seventh class* of cupriferous matters comprise all the waste substances collected in factories in which copper is worked. The substances thus accidentally treated are very varied. Those constantly worked in Wales are the sweepings of the mill-rooms, in which large quantities of sheet copper are continually being manufactured. They are generally oxides of copper, mixed with small quantities of siliceous matters. This class usually contains about 75 per cent. of metal, and is worked in the melting, 4.

It is not often that smelters can obtain, in constant proportions, ores of the same class, the proportions changing considerably even in the course of a single year. During these last 20 years this has happened to a great extent, owing to the introduction of foreign ores. Every variation in the supply of ores of a certain class necessarily entails corresponding modifications in the operations, in which the ores in question are employed. In opposition to that which occurs in smelting-works supplied by a small number of mines, nothing is constant in the Welsh works, even from one week to another, in the relative importance of the various operations, in the number of furnaces devoted to each, in the quantity, the yield of copper, or the chemical composition of the resulting compounds.

Nevertheless, from the chemical researches, and the calculations which will follow, it will be seen that some relation can be arrived at, especially concerning the composition of the ores, and a very near approach to a general mean of the results. These results were collected in a large smelting-works, in which about 47,000 tons of ore were treated annually, yielding about 6250 tons of copper. The following table shows the absolute and relative weights, as well as the yield of copper of each of the seven classes of ore treated every week:—

Relative Proportions and Mean Contents of the Seven Classes of Ores.

Names of Ores.	Relative weight.	Total weight of ore fused in a week, in tons.	Content of copper for 1000 of ore.
1st class, treated in 1 and 2.....	0.790	730.1	0.098
2d " " " 1 and 4.....	0.093	21.5	0.228
3d " " " 0.085.....	0.085	77.6	0.182
4th " " " 0.081.....	0.081	73.5	0.385
5th " " " 0.011.....	0.011	10.0	0.120
6th " " " 0.008.....	0.008	7.4	0.062
7th " " " 0.002.....	0.002	2.0	0.750
Totals and means.....	1.000	912.1	0.137

The substances entering into the composition of the ores of copper may be divided in a metallurgical point of view into three groups:—1. *Silica, the earthy oxides and ready formed silicates*, all of which, after various reactions, nearly entirely pass into the slags.—2. *The sulphuretted and oxidised compounds containing all the copper to be extracted during the process*, and whose other elements pass into the slags, or are dissipated in the gaseous state.—3d, and lastly, *The water and carbonic acid* which are immediately volatilised by the first contact of heat, either in the calcination or smelting. The principal elements of the chemical composition of each of the three groups, and each of the classes of minerals, are shown in the following table:—

Chemical Composition of the Seven Classes of Ores.

Names of Ores.	Principal Constituents collected into three Groups.							Total weight of Ore fused in a Week.
	First Group. Silica and Earthy Bases.			Second Group. Sulphurets and Metallic Oxides.			Third Group. Carbonic acid and Water.	
	Silica.	Alumina.	Lime.	Magnesia.	Copper.	Iron.	Various Metals.	
1st class.....	294.4	11.7	1.2	3.1	70.5	148.2	7.6	730.1
2d " ".....	5.4	—	—	—	4.9	4.7	—	21.5
3rd " ".....	21.8	1.0	—	—	14.1	17.9	—	77.6
4th " ".....	23.0	—	1.1	—	23.3	8.8	—	73.5
5th " ".....	4.3	—	—	—	1.2	2.1	—	10.0
6th " ".....	1.4	—	—	—	4.9	—	—	7.4
7th " ".....	—	—	—	—	1.5	—	—	2.0
Totals.....	350.6	12.9	2.7	3.7	125.4	181.7	8.4	912.1

In the following tables the grouping of the same substances in a different point of view is given, as well as the mineralogical composition of each of the ores. If we reflect that nearly all parts of the world furnish a portion of the ores smelted in Wales, it will be understood that these results possess much interest in the study of the geology of our planet; for they give the clearest idea we have, up to the present time, been enabled to procure concerning the relative abundance of the various natural compounds of copper in that portion of the terrestrial crust accessible to the labours of mankind. It is true that we possess many hundred analyses of every known variety of copper ore; but a consideration of these, without regard to the quantity of each ore attainable by the smelter, would be of little interest in a practical point of view. The following tables, however, completely supply this desideratum; for not only is the mineralogical composition given, but we have details of the quantities of each substance actually worked on the large scale, and, of course, giving an absolute idea of the mean composition of the copper ore of all climes, which are smelted in the neighbourhood of Swansea:—

MINERALOGICAL COMPOSITION OF THE SEVEN CLASSES OF ORES.

Name of Mineralogical Elements.	1st Class.	2d Class.	3d Class.	4th Class.	5th Class.	6th Class.	7th Class.	Totals
1st Absolute Proportions:								
Copper pyrites.....	194.2	13.4	33.5	3.0	3.4	—	—	247.5
" peacock, regulus, &c.....	—	—	0.6	4.0	—	—	—	4.6
" sulphuret.....	—	—	—	9.0	—	—	—	9.0
" oxide.....	3.2	0.2	2.7	10.4	—	0.2	1.7	18.4
" sub-oxide.....	—	—	—	9.7	—	1.8	—	11.5
Total of cupreous mineral.....	197.4	13.6	36.8	36.7	3.4	5.9	1.7	295.5
Iron pyrites.....	191.9	1.6	13.1	1.3	1.7	—	—	208.6
Various sulphurets.....	8.7	—	0.7	—	—	—	—	9.4
Peroxide of iron.....	5.5	0.4	3.0	9.9	—	0.4	—	18.8
Various oxides.....	—	—	0.3	0.1	—	—	—	0.4
Quartz and silica.....	294.4	5.4	21.8	23.0	4.3	1.4	0.3	350.6
Earthy bases.....	16.0	0.3	1.4	1.5	0.1	—	—	19.3
Water and carbonic acid.....	4.2	0.2	0.5	1.1	0.1	—	—	6.2
Total of gangues.....	522.7	7.9	40.8	36.8	6.6	1.5	0.3	616.6
General totals.....	720.1	21.5	77.6	73.5	10.0	7.4	2.0	912.1
2d Relative Proportions:								
Copper pyrites.....	0.213	0.014	0.037	0.003	0.004	—	—	0.271
" peacock, regulus, &c.....	—	—	0.001	0.004	—	—	—	0.005
" sulphuret.....	—	—	—	0.011	—	0.004	—	0.015
" oxide.....	0.004	—	0.003	0.011	—	—	0.002	0.020
" sub-oxide.....	—	—	—	0.011	—	0.002	—	0.013
Total of cupreous ores.....	0.217	0.014	0.041	0.040	0.004	0.006	0.002	0.324
Iron pyrites.....	0.210	0.002	0.015	0.001	0.002	—	—	0.230
Various sulphurets.....	0.009	—	0.001	—	—	—	—	0.010
Peroxide of iron.....	0.006	—	0.004	0.011	—	—	—	0.021
Various oxides.....	0.002	—	0.001	—	—	—	—	0.003
Quartz and silica.....	0.324	0.007	0.021	0.026	0.005	0.002	—	0.385
Earthy bases.....	0.017	—	0.002	0.002	—	—	—	0.021
Water and carbonic acid.....	0.005	—	0.001	0.001	—	—	—	0.007
Total of gangues.....	0.573	0.009	0.044	0.041	0.007	0.002	—	0.676
General totals.....	0.790	0.023	0.085	0.081	0.011	0.008	0.002	1.000
Copper contained in 100 parts of ore.....	0.098	0.228	0.182	0.385	0.120	0.062	0.75	0.137

[To be continued in next week's Mining Journal.]

THE VIRTUOUS LADY MINE.—ORIGIN OF A TRADITION.—Mrs. Bray, the novelist, gives the following explanation of the "peculiarly-shaped mineral," found only in the Virtuous Lady Mine, obtaining its name. She writes: "In my first local novel, of *Fitz of Fitzford*, I introduced a character, which played no very genteel part, called Betsy Grimal. In one of the towers of the abbey gateway leading to the abbey grounds, now in the vicarage gardens, tradition averred that a woman so named had many years ago been murdered; and some stains on the side of the wall of a winding-stair were duly pronounced to be those of her blood. It struck me that I would make Betsy Grimal into a character, for my novel; instead of murdering her, I made her to have been concerned in a deed of blood (founded on tradition), and which was supposed in my story to have occurred before the commencement of the tale. At the romantic mine of the Virtuous Lady, situated in the wildest and most beautiful spot on the Tavy, there are many side caves, like chambers, the mine being entered by a cavern, still visited by strangers, of a most Salvo-like description. Well, to make an end of all this, let me say, that I caused Betsy Grimal and her companion in iniquity, George Stanwich, to conceal themselves for some time, by finding shelter in the cave of the Virtuous Lady Mine. A year or two after the publication of *Fitz of Fitzford*, this old mine was worked anew, and as my story was popular among the natives here, the miners employed at the Virtuous Lady, not only named the peculiar-shaped mineral they there found, of which you have a specimen, 'Betsy Grimal's slipper,' but likewise found out an apartment for her, and showed the cave and cells in the rock, pointing out to strangers where Betsy Grimal had more especially made her dwelling. So much at last did they believe their own fiction respecting Betsy, that on my visiting the cavern with Mr. Bray, they very eagerly offered to show me where she had concealed herself. And thus has an incident of my own invention become a tradition. The mine, I believe is not being worked, but I am not certain."

TO LOCOMOTIVE MANUFACTURERS.—The Ministry of Public Works, in Austria, have offered a prize of 20,000 imperial ducats for a locomotive the most suitably constructed and adapted to convey goods and passengers on the Railway of the Semmering Mountains; and for five other locomotives, which shall approach nearest to the first prize, the sums of 10,000, 9000, 8000, 7000, and 6000 imperial ducats each.

NEW LOCOMOTIVE-ENGINE.—A new locomotive-engine, designed and patented by Messrs. McConochie and Claude, was tried on the Liverpool, Southport, and Crosby Railway, and following the trial of Messrs. England and Co.'s light-engine, excited much interest. The object of the patentees was to combine lightness, power, and economy of fuel, and we believe they have succeeded in their aim. The engine (the *Spiffie*) conveyed a train of carriages from Waterloo-station to Southport at a rate of speed varying from 40 to 60 miles an hour, and when at its highest velocity, manifested no oscillation whatever. The *Spiffie* is a four-wheeled engine, with 14-in. cylinders and 20-in. stroke, the driving-wheels being 5 ft. 6 in. The working valves and pumps, which are usually crowded together underneath the boiler, are on the *Spiffie* placed outside the frames, so that for all the purposes of adjustment, cleaning, or repairs, they are as easy of access as similar parts of a fixed engine. On the whole, the trial of the engine gave great satisfaction. It was constructed by Messrs. Forrester, of Vauxhall Foundry.—*Liverpool Advertiser*.

BRENTFORD AND SOUTH-WESTERN.—A railway of 3½ miles at a cost of 50,000l., is proposed from Brentford to Wormwood Scrubbs, to unite the South-Western, Great Western, and London and North-Western.

WOLVERHAMPTON, CHESTER, AND BRINKENHEAD RAILWAY.—The call of 120l. made by Master Brougham, to pay off the liabilities, has been paid in full by the members of the provisional committee.

VALE OF NEATH AND SOUTH WALES BREWERY.—The liabilities of this undertaking are estimated by Mr. Norris, the official manager, at 120,000l.

MINES AND MINING.—No. IV.

BY EVAN HOPKINS, C.E., F.G.S.

If a mine be worth working at all, it is worth an office in which the business of the mine may be transacted, totally free from share dealing. If it does not answer to carry on a mine under the management of an experienced mining man of business, it certainly cannot answer to leave it to the entire control of those whose business is inimical to, and incompatible with, the proceedings of legitimate mining. Some capitalists complain bitterly of brokers and mining agents. They say the former grind double—i. e., both the miner and the adventurer; and that they have always at command numerous mine agents ready to write reports, not on the merits of the mine, but to effect the object they have in view; and, consequently, they look at those persons with a degree of suspicion and horror.

A great deal of this proceeds from the want of judgment on the part of the capitalist. There are highly-respectable brokers, and there are also intelligent and upright mine agents, but they should be confined to their respective capacity. Before the capitalist enters into any mining speculation, or incurs any expenditure, it is necessary to satisfy himself that the undertaking is likely to be profitable, if prudently and systematically worked. This should be proved by men of extensive practical experience and reputation, and who hold themselves responsible, morally speaking, for the opinion given. When this is affirmed, and the conditions and dues moderate, the capitalists should not destroy the chance of success by handing over the management to improper and inexperienced hands. Were capitalists a little more discreet, and able to analyse those persons who are commonly employed to make reports, and eradicate from their minds their vain opinions, flattering hopes, false valuations, and confine them strictly to the reality, there would be fewer worthless mines, and perhaps a greater number of dividend mines at work. However true it is that some mine agents have acted improperly, causing a great waste of capital for the benefit of the few, and at the expense of the many, yet I maintain that the British, and more especially the Cornish miner, is a shrewd, intelligent, and persevering person, and has established for himself a name, from habits of industry and self-education, equal to that of any other nation, and frequently much more profitable to adventurers.

ON THE GEOLOGICAL AND MINERAL FEATURES OF CERTAIN DISTRICTS OF NORTH WALES.—No. III.

BY ST. PIERRE FOLEY.

If we follow the opinions of Hutton, and other geological fire-worshippers, we must conclude that North Wales, at some foregone period of the history of the world, must have been a true *terra del fuoco* to form such a circle of volcanos as Merioneth and Carnarvon in particular seem to be composed of. It is not, however, that you are to understand that these *pyroboles* were confined to the mere circumference of this circle, but rather that they shot forth from various parts within it, sometimes exhibiting, as it were, the apex of some conical furnace beneath, or crater-like, having its concave sides ranged or formed from its very bottom to its rim in ponderous masses of hornblende trap or segnetic tabular or parallel-sided crystals; or, exhibiting portions of its radii, or diameters, in vast ledges along the tops of the mountains; or, spreading their thick and baking mantles over some of the most valuable stratifications in the world, to be mined or quarried out in future ages for "man's sole use," to roof his dwellings, and thus to shelter him from the Alpine storms, so, to be prevalent in these glorious regions hereafter; or, for the thousand and one beautiful, useful, and ornamental purposes into which roof slate and its adjunct, slab rock, are now metamorphosed by the inventive genius and skilful handicraft of the mechanic of this age, wondrous appliances of powers; understood formerly as paintings of those spiritual visions which the poet alone could make palpable, and the writer of romance produce in solecisms of ideal reality. Just take a look at the very pretty, exact, and beautiful geological map of North Wales, lately published by, and for, the Geological Society, and you will at once perceive in the trappan, segnetic and porphyritic divisions of those portions of the *principality* now spoken of, how actively the Plutonian agency must have been at work to produce such mountainous effects, and then, perhaps, after a pause, you may meditatively whisper to yourself, *Cui bono?*

If you have the refined taste of a geologist, confined, however, to those divisions that are really serviceable to man in the numerous and invaluable uses to which he converts metallic and mineral products, so prolific in regions of the above description; or if you have a taste for agricultural pursuits, with a sufficient knowledge of analytical chemistry to examine your soils, understand their peculiar agencies, and know how to convert them to the most profitable purposes, but, at the same time, to know likewise that these very soils are the old abradons of those volcanic or Plutonic eruptions on which you now contemplate; or if you be of "the sublime and beautiful" class of happy mortals, the answer to the question is at the very "tip of your tongue" at once; and you pronounce—how good and loving was the *Great Architect* of creation, to prepare such exhaustless resources for the application of man's best studies, and such invaluable materials for man's use and comforts, ages before he opened his eyes to the splendour of the heavens, or to the beauties of his terrestrial paradise, that he might give employment to his mind and body—that, by his knowledge and skill, he would be able to transmute inorganic elements to members and food of organism, and to infuse a soul, as it were, into inert matter, and thus to become, at the appointed time, the lord of the entire field of material creation. Or if you be of the scientific class of engineers, your reply is taken from your own miniature worlds, "that all these ancient remains were once the safety-valves of the internal machinery of Nature, made and arranged by the all-wise skill of the Grand Master of engineers himself."

The only class I at present can lay my finger on, that cannot answer this curt and now legitimate question of *cui bono?* referring still to the above inquiry, is that of another class of geologists, known in the circles of science as *geologists of the organic world*, who in their useful (!) works seem to attend solely to the brains of the science, and, therefore, might assume with every honour the magniloquent cognomen of cranioscopists; but as they have not as yet found, notwithstanding their numerous microscopic inspections, even as much as the *polydipod* of a *helianthoida*, they cry out *cui bono?* with a shrug of contempt; and sometimes are ill-natured enough to shout "mad dog" against the honest, open, and generous character of those vast mineral deposits, because, forsooth, they do not fall within their range of inquiries.

To the scientific agriculturist it is not necessary to describe the rich qualities of soils always found in proximity with trappan rocks; and to the practical agriculturist, not yet initiated in a knowledge of such properties, I should earnestly recommend him to read some of the many valuable and cheap works on this subject, and to turn his reading to the instructions to be found therein; when in a very short time he will understand the profits that might be derived from a proper attention to the culture of such soils, now almost totally neglected in Wales. But to the miner, for whose interest I feel chiefly concerned, I now turn, in hopes that my humble efforts may prove of use to him personally; and, from his skilful labour, produce results which will tend to the prosperity of this part of the country. To assist him in such pursuits, and to point out what I consider the most economical mode of ascertaining the value of metallic lodes, or veins—such as are found in porphyritic schists, and at the junctions of such strata with clay-slate, or other anagoric metallic-bearing rocks—I shall claim his attention in my next article.—*Lincoln's Inn-fields*.

OXFORD UNIVERSITY.—The deputy reader in geology (Mr. H. E. Strickland, of Oriel) will deliver a course of about 12 lectures during the present term at the Clarendon-building. The lectures will commence on Tuesday the 22nd inst., and will be continued each Tuesday, Thursday, and Saturday. The deputy reader in mineralogy (Mr. M. H. N. Storey Maskelyne, of Wadham), also intends to give a course of lectures during the present term upon the chemical and physical characters of minerals. An introductory lecture will be delivered on Monday, the 21st inst., at the Museum in the Clarendon; and the course will be continued on every Monday and Friday.

GOVERNMENT TAX ON EXCURSION TRAINS.—The Railway Commissioners have remitted the tax upon excursion trains, where they carry passengers at less than 1d. per mile.

NEW VESTA MATCH-BOX.—A box for holding vesta matches, of very novel and ingenious formation, has been submitted to us, which possesses many advantages over those hitherto in use. It consists of a shallow metallic box, similar to a snuff box, with a deeply-serrated bottom. The two edges of this box, at opposite sides, are provided with flanges of peculiar form, in which the top, or lid, of the box slides, ridges being formed on the top of it, which correspond with the formation of the flanges, and prevent it from being totally withdrawn from the box, and maltreated, or lost, as is a common case with the ordinary boxes, although it permits it to be sufficiently opened to receive or replace the matches. This lid is provided with an orifice, for holding the match when lighted for sealing letters, &c. The whole is got up in a very neat, not to say ornamental, manner, and does great credit to the patentee, Mr. A. S. Stocker, and the licensees, Messrs. Brookbank and Finch.

ROYAL POLYTECHNIC INSTITUTION.—Mr. Geo. Barker has just commenced, at this establishment, to give lectures on the ballad music of England. The ballads have been well selected, and the subject is treated in a popular and instructive manner, being altogether a highly musical treat. The lectures have been extremely well attended, and the audience appeared to highly relish the treat provided by the management.

BRITISH MINES.

fm., the lode is 1 ft. wide, yielding good stones of ore. In the 100 end, driving west, by 6 men, at 107. per fm., the lode is 3 ft. wide, yielding 3 tons of ore per fm.; in the slopes below the 100 fm. level, east of winze, by 6 men, at 41. 10s. per fm., the lode is 3 ft. wide, yielding 3 tons of ore per fm.; in the slopes below the 100 fm. level, west of winze, by 6 men, at 41. 10s. per fm., the lode is 3 ft. wide, yielding 3 tons of ore per fm. In the 110 end, driving west, by 6 men, at 112. 10s. per fm., the lode is 1 ft. wide, yielding stones of ore. In the 120 end, driving west, by 4 men, at 122. per fm., the lode is 1 ft. wide, unproductive. In the 180 end, driving west, by 4 men, at 107. per fm., the lode is 1 ft. wide, yielding 1 ton of ore per fm.; in the 180 end, driving east, by 6 men, at 122. per fm., the lode is 3 ft. wide, yielding 2 tons of ore per fm.; in the winze sinking below the 180 fm. level, by 6 men, at 91. per fm., the lode is 4 ft. wide, yielding 4 tons of ore per fm.; the cross-cut driving north at the 180 fm. level, by 4 men, at 111. per fm., is in from shaft 27 fms. The cross-cut driving south at the 200 fm. level, by 8 men, at 122. per fm., is in from shaft 10 fms. In the 100 end, driving west, at Stray Park, on north lode, by 3 men, at 74. per fm., the lode is small and unproductive.

KIRKCUDBRIGHTSHIRE MINING COMPANY.

The monthly meeting of shareholders was held at the offices, on Tuesday, when the accounts were presented and passed, showing—Cost for September, 5292. 1s. 1d.; balance last account, 1707. 1s. 1d.—6991. 2s. 2d.—Ores sold, 12th Sept., 4131. 13s.; leaving an apparent balance against the mine of 2867. 9s. 2d. It was explained that 40 tons of lead ore, sold on the 10th inst. (part of 50 tons raised in the past month, the expense of raising and dressing of which was included in the cost-sheet charge for Sept.), was not yet in cash, and, therefore, not placed as an asset in the accounts, otherwise the real statement would show a balance of upwards of 2000. in favour of the company.

The agent's report gave a very favourable account of the state and prospects of the mine (Cairnmore), and explained that the heavy cost charged for Sept. arose from the extra merchants' bills on account of the new steam-engine. In future the monthly cost will be much lighter; and whilst the agent looks forward to regular and greatly diminished expenses, he confidently expects, as more ground is opened, much greater quantities of ore will be raised.

WEST PHOENIX MINING COMPANY.

At a meeting of shareholders, held at the offices of the company, High-street, Exeter, on Monday, the 14th inst.

JEFFERY LANG, Esq., M.D., in the chair.

Several reports and other documents having been read, whereby the evidence appeared to be conclusive as regards the West Phoenix lode being the same as the Phoenix, on which an immense quantity of rich ore is now raising; and it being fully demonstrated to the meeting that similar large deposits positively exist in the West Phoenix set, and at a very shallow depth, it was resolved that the mine be proceeded with immediately, and that the utmost economy be observed in carrying on the works. The following gentlemen were appointed the committee, to carry such object into effect:—Messrs. J. Lang, M.D., John Porter, E. Suter, W. Milton, W. Whitechurch, C. Titherley, H. Vatcher, J. S. Higgin, C. Richards, W. Channing, W. L. Jones, R. Serjeant, and W. Balle.—The committee have offered their services gratuitously.

WHEEL SETON MINING COMPANY.

The usual two-monthly meeting of adventurers was held on Monday, the 14th inst., when a dividend of 51. per share was made, and the following statement of accounts presented and passed, showing—By copper ore sold July 4, 1841. 17s. 11d.; ditto August 1, 2586. 18s. 2d. (less lord's dues, Trevelard, 1791. 18s. 2d.)=4248. 17s. 11d.; by copper ore sold (less lord's dues, western ground, 71. 9s.), 1041. 6s.=4389. 3s. 11d.—Amount of cost for July month, 14081. 3s. 2d.; ditto for August, 13831. 3s. 1d.; merchants' bills, 8401. 10s. 6d.=35761. 16s. 9d.—showing profit, 7761. 7s. 2d.; add balance of last account, 3071. 8s.=10832. 16s. 2d.—Dividend of 51. per share, 9901.; leaving balance to next account, 981. 15s. 2d.

WHEEL BLENCOWE MINING COMPANY.

A general meeting of shareholders was held at the mine, on Thursday, the 3d inst.

MR. W. PHASE, in the chair.

The following statement of accounts was presented, showing—Balance due to purser at the last meeting, 867. 16s.; cost for May, 261. 9s. 8d.; ditto June, 601. 8s. 10d.; ditto July, 467. 17s. 4d.; merchants' and other bills, 261. 16s. 3d.—2451. 12s. 1d.—Tin sold, July 3 (less lord's dues, 31. 15s. 5d.), 521. 16s. 1d.; carriage, 15s. 8d.; tin sold July 31 (less lord's dues, 11. 15s. 8d.), 241. 13s. 9d.; tin sold September 7 (less lord's dues, 12. 17s. 7d.), 261. 6s. 9d.; carriage, 6s. 11d.; received on account of call made July 27, 751.—leaves balance due to purser, 651. 12s. 11d. A call of 7s. per share was made.

The following report, from the agent, was read to the meeting:—

Oct. 14.—At our last meeting I reported our having a hard channel of ground to pass through in driving the 30 fm. level, and that at the time of the meeting it appeared to be more favourable, which led me to hope that we should cut the southernmost lode in about six weeks; in that hope, I regret to say, I was disappointed, the ground proving, and still continues to prove, so hard, that I cannot calculate on reaching these lodes in less than a month from this time. It was suggested at the last meeting that a shaft should be sunk to afford ventilation to the 20 fm. level, and to enable us to draw the stuff to the surface with a greater facility; this has been accomplished, and it is found to be of great advantage. We continue to raise some tin from the old south lode. We can know nothing of the east and west lodes until they are cut, which I am anxious to have done, as I have a good hope that they will be found productive.

REPORTS ON MINES.

SIR.—I have frequently heard mine adventurers complain that the results of mineral operations do not justify the reports which the agents have given of them. Now, this diversity must arise from one of the following reasons:—Ignorance on the part of the reporter, or intentional misrepresentation, for selfish or party purposes, or over sanguine anticipations. Men who are consciously ignorant of the work of a reporter, should have the honesty to decline the office; those who misrepresent should also learn honesty, and the over sanguine should moderate their expectations, and be more cool in their judgment on the character of the lodes. It is frequently the case that mine agents promise certain profits within given periods, and state that certain lodes will yield so many tons of ore per fm., which afterwards are found to be almost worthless. When promises of such kind are given, adventurers naturally expect shortly to hear of the sale of a parcel of ore; but, alas! they often look in vain. I might adduce examples in point, but I forbear, and will conclude this letter by tendering a word of advice to mine agents. It is this—always give as faithful a report as you possibly can, and rather keep within than go beyond the probable production of the mine.—A MINER: Oct. 16.

THE ARTICLE ON THE DEVON GREAT CONSOLS.

SIR.—I observe that it is the intention of Mr. Murchison to reprint the history of the proceedings of these important mines. However interesting such a compilation may be to the shareholders of the Devon Great Consols, yet I think the readers of your useful and scientific Journal have a right to expect something more original from the pen of Mr. Murchison. I therefore trust that, in the event of another edition, Mr. Murchison will satisfy Captain Ennor, and others, by entering into the geological character of the bunches of ore, and other matters connected with general mining, and thus render it still more worthy of, for a second time, so large a space in your valuable paper. J. C. Tavistock, Oct. 17.

CARADON WHEEL HOOPER.

SIR.—I was on this mine to-day, and examined the stuff broken from the lode, and I thought what a pity it was that such a set should be abandoned;—richer yellow copper I never saw than I have broken from some of the lodes, and, a little to the north-east of the engine-shaft, South Caradon party are taking up some good copper. If any company felt inclined to take up the mine, and lay out about 30000l., I would engage to get them a good return. There is an engine-house erected with the best of materials, well-built, and large enough to take in a 50-hp cylinder-engine, a good smith's shop, account-house, material-house, and powder-house; a good shaft sunk to the 66 fm. level below the surface, and the lodes not cut at that level; there are three lodes cross-cut in the 58, with copper in each—these three will meet about the 60 fm. level; there is also a very kindly lode north of the shaft in the 50—this lode has not been seen under the 50 fm. level, and a cross-cut has been put out in the 66 fm. level, within 2 or 3 fms. to the last lode. JOHN SEYMOUR. St. Cleer, Oct. 16.

EXMOOR WHEEL ELIZA MINE.

SIR.—For some time past the Journal has contained letters from Mr. Ennor, respecting various mines. In one communication, dated 31st August, reference is made to Tincroft, Wheel Golden, and a splendid lode at Bridestowe. The remarks on Tincroft brought no reply, the Cornish adventurers knowing something of the writer. Mr. Thorn, of Barnstaple, condescended to impeach the statement respecting Wheel Golden; and an "Old Miner" set Mr. Ennor somewhat right in reference to the geology of Bridestowe.

What does Mr. Ennor mean, when he states that "if tin is found near Bridestowe, I should set down the old theory in this district to be incorrect?" Does he mean his own theory, exploded by the tin lodes of the district? It cannot be that of Sir H. De la Beche, which is confirmed by the results. Mr. Ennor, not content with the exposure of his errors, writes again, in the Journal of Sept. 21, respecting Exmoor Eliza; the chief part of his letter consists of a charge of concealment of the reporter's name, as if it was intentional. He well knew it was withheld, as all names are from reports, as the paragraph would have thereby come under the head of advertisements. So much for the honesty of the impeachment. The Journal of Oct. 5 brings a rejoinder from Mr. Ennor, and the same page contains a statement respecting Treburget Lead Mine, in the parish of St. Teath, Cornwall. It was in this mine that Mr. Ennor, through paternal interest (for he never was a practical miner), became an agent; he was subsequently engaged at a little antimony mine in the north of Cornwall. These circumstances, together with his employment at the Delabole Slate Quarries, are barely sufficient qualifications to entitle him to give dogmatical opinions,

either in geology or the nature of metalliferous veins—slate and lead, perhaps, excepted. Many practical agents (not quarriesmen), of high standing in the mining world, have inspected Exmoor Wheel Eliza, and I may venture to assert, without fear of contradiction, that not one of them has given any other than a highly encouraging opinion, their judgments having been formed after a careful examination of the lodes and the surrounding strata. When I see such gossan as Exmoor furnishes covering the backs of the lodes, and other indications—and no mine in this county can produce better—I conclude this to be one of the effects of a large course of copper. I concur generally in the report of Capt. Fezzy, as inserted in the Journal of the 14th Sept.; and must repeat, that such indications as this mine presents are seldom met with. My opinion is that of a miner of 40 years standing, having been nearly 30 years a tributor. A practical miner need not be "lynx eyed" to conclude that in depth we shall obtain large quantities of copper, as we have hitherto found that the lodes and branches contain more copper the deeper we sink. PETER TURY, October 9, 1850. RICHARD MOORE.

MINING IN SCOTLAND.—It is with much pleasure we observe that a highly respectable company has just been formed, for the purpose of working the Black Craig and Craigton Lead Mines, near Newton Stewart, in Kirkcudbrightshire. The set is one of the most extensive in Scotland, being three miles on the course of the main lode, and is held under lease for 31 years, at 1-14th dues. The mines formerly returned profits to the amount of 25,000l. per annum, but, owing to imperfect machinery, they were for some time stopped. The old workings consisted of numerous shafts, sunk to various depths, but only two of them below the adit level; and, therefore, it is only fair to presume that, with machinery and a judicious outlay of capital, considerable quantities of ore will be raised at greater depths. The reports of parties who have inspected the mines all concur on this point, and Mr. E. A. Crouch, of Liskeard, states, "on the whole, the adventure affords prospects of success rarely met with." The mines are conducted on the Cost-book System, and every inquiry is courted by the company, to which we heartily wish success. We are always glad to see energy and capital directed to the advancement of mining, but ever most pleased when applied to the exploration of a new field; it convinces us that the opinions we have ever expressed upon the safe and profitable character of mining speculations, when fairly carried out, are beginning to be entertained by the public; and we shall watch the progress of the Black Craig and Craigton Mines with no little interest, seeing that the energies of the company will be directed to the development of the mineral riches of a country which, though hitherto but little known to the English capitalist, we have ever believed to be well worthy his attention.

CRAIG-Y-MWYN LEAD MINE.—Operations for the development of this mine, situate in Llanrhaadr, Montgomeryshire, a descriptive notice of which appeared in a former Number, are proceeding very satisfactorily. The set, it may be recollected, comprises an area of four square miles, in which space the "lead mountain," Craig-y-Mwyn, is included. Four levels had been driven, the reports of which are considered fully to equal every fair expectation. The favourable character of the strata for driving, and the great water-power contiguous to the mine, are features not to be overlooked, in judging of the value of the set. The arrangements for the formation of the company for developing its resources are now complete, and a committee of management is appointed, composed of Messrs. Richard Broughton, T. Bibby, Robert Broughton, B. Williams, and W. L. Asterley. It has now taken its place in the mining share list, 350 shares having been disposed of on Saturday last at 81. per share; and it is stated, on authority, that in one level they are now driving through solid ore, worth 10 to 12 tons per fm., with the means of levelling under to the depth of 100 yards below it, the level now cut being 230 ft. from the surface. By reference to the rules, it will be seen that the mine will be worked under the Cost-book System, and general meetings held every three months; each share to represent one vote, and every shareholder having the option of withdrawing from the undertaking on giving three months' notice.

DALRIEU COPPER AND LEAD MINE.—This set, which is situated in the lordship of Bult, seven miles from Rhayader, county of Brecon, is a continuation of the Nant-y-Carr Copper Mine, in which, at a depth of 35 fms., is found nearly solid ore, 3 ft. wide, yielding, upon analysis by Messrs. Johnson and Co., the Government assayers, 33½ per cent. of pure copper. By a shaft sunk to 12 fms., this lode has been traced into the Dalrieu. The latter contains, moreover, 12 additional lodes—ten of copper, and two of lead. It is proposed to drain the mine by a water-wheel of sufficient power to pump to any required depth, the same wheel being employed to work all the machinery required for crushing and dressing the ore, a great economy of time and labour being thereby ensured. The mine is divided into 3000 shares, and returns are anticipated from the main lode in three months from the completion of the machinery. The fullest confidence is apparently entertained of the richness of the set, which comprises 500 acres, on a lease of 30 years, renewable for a similar period, and the certainty of handsome returns, in proportion to the capital expended in extending the workings.

GREAT WHEEL MICHELL, EAST WHEEL KICKWICH, AND WEST WHEEL VICTORIA CONSOLIDATED TIN AND COPPER MINES.—These mines, situate in the parish of Lanivet, near Bodmin, Cornwall, extend for one mile on the course of the lodes, and are three-fourths of a mile in breadth—being held on lease for 21 years, at 1-15th dues. They are to be worked on the Cost-book Principle. Eight lodes are said to have been discovered—the gossans of which are described as of superior quality. The lodes have been proved to the depth of 20 to 30 fms.; and, in sinking through the gossans, stones of copper ore of 3 cwt. have been found. The indications mainly relied upon are peach, impregnated with copper, rich mudic mixed with prill, and fine quartz and blende, all strongly corroded with verdigris—a great fact with miners in judging of the quantities of copper ore likely to be produced. On the exploration of these mines, 10,0000l. have been already expended, with results which are considered to justify a further expenditure of capital to the amount of 15,0000l., which is proposed to be raised on 3072 shares, of 51. each, of which 30s. is to be paid on allotment—the amount to be applied to the working of the mines, and the payment of the expenses of the last six months. The present proprietors are to be allowed 60000l. in return for the 10,0000l. they have expended, to be paid out of the profits at the rate of 15 per cent., or one-half the amount taken in paid-up shares. It should be added that the stratum is a blue and white killas, at the foot of a granite hill; and a supply of water passes through the mine sufficient to draw the ore to surface, and work the machinery for stamping and crushing—thus saving the necessity of erecting steam-power for these purposes. The company proposes to connect the mine with the Bodmin and Wadebridge Railway by a short branch line, with a view to reduce the cost of bringing materials for the working of the mine, as well as that of conveying ore to the shipping port. The report of Mr. Bennetts, dated the present month, is very strongly recommendatory of the outlay of further capital on these mines, which, in that gentleman's opinion, are likely, with proper management, to rank among the most valuable ones in the county.

NORTH WHEEL BULLER (OR GREAT SOUTH TOLGUS) MINE, well-known by the former name for many years past, is an extensive set, possessing eight known lodes of copper, several of which have been wrought some time by means of a water-wheel, and produced large quantities of rich ore. The workings have hitherto been confined to one part merely of the set, where the engine-shaft is about 60 fms. below the adit. The company recently formed in Manchester have purchased the materials, &c., on the mine, and a steam-engine of 120-horsepower, with the intention of prosecuting the works with energy; and have provided adequate means for that purpose, having divided the mine into 1200 shares, with a deposit of 51. per share—all of which have been appropriated to highly respectable parties. The surface work is already considerably advanced; a large engine-house and stack, and other buildings, being now finished, the engine put up, and working very well—the mine being now free of water and cleared, and the miners actively engaged on several lodes. Satisfactory results are confidently anticipated, not only from the highly favourable locality, but also from past experience of the set. The superintendent has been confined to Capt. W. Sincok, of Redruth; the agency to John Hays, Esq., pursuer of Great Consols, United, West Buller, South Tolgus, and other leading mines; and the direction to gentlemen connected with Manchester and the neighbourhood. It may be necessary to state, that this mine adjoins South Tolgus, and is quite distinct from a new mine which has taken the same name—viz., "North Buller"—and lately commenced by Mr. Pike and friends.

NORTH WHEEL ROBERT COPPER MINE.—This set adjoins East Wheel George to the west, and is situated about three miles from Tavistock, in the county of Devon. It is held on a lease for 21 years from the date of the expiration of the letter of license, in September, 1851, at 1-15th dues. A piece of ground, extending about half a mile westward, has been acquired by the present adventurers, in addition to the original extent of the set, 300 fms. east and west, and 800 fms. north and south—a circumstance held to be of much importance in reference to the future interests of the company. The mine is to be conducted on the Cost-book Principle, and is divided into 1024 shares, on which a call of 2s. 2d. per share is announced—out of which 10000l. will be awarded in shares to that amount, as compensation to the present adventurers, for their past trouble and general outlay on the property, to Sept. 30th last. Looking at the character of the reports furnished by Messrs. Hitchens, Richards, Trevelan, and Heath, every inducement is presented for developing the resources of the mine. Between 20000l. and 30000l. appear to have been already expended in driving an adit and other necessary work, and the exact positions and bearings of the lodes, cross-courses, &c., are now being ascertained; while the ready facilities and inexpensive means of working at command, afford the promise of a remunerative issue to the undertaking.

OKEL TOR.—At this mine a new engine-shaft has been commenced, and is down 4 fms. from surface; the shaft is 11 ft. long, and 7 ft. wide, within the timber. The tributors are busy dressing their lead, which will be ready for market by the end of the week; another pair of tributors are working in the back of the adit, at 10s. in 17. The lode which was sunk on a short distance in

the bottom of the adit, was found to be 34 ft. wide, composed of prill, lead ore, hornspar, and a beautiful white flookan by the side; the water prevented more being done here. The mine has recently been inspected by Mr. Evan Hopkins, who has sent in the following report:—

This mineral property is situated to the east of Calstock village, in a narrow neck or loop of ground, in a winding of the River Tamar. The rock within the limits of the set is composed of clay-slate, dipping north; it is intersected by the copper lodes of the district, showing very good gossan, running, more or less, east and west, and by north and south lead lodes. The most important feature in this ground is the lead lodes, and more particularly the one in which an adit has been driven 50 fathoms in extent. The rock appears highly metalliferous, and presenting all the ordinary indications for the production of bunches of lead ore in depth. A considerable quantity of copper ore may be found near the intersection at deeper levels, but the prospects are principally confined to lead. I think, from the structure of the rock, and other geological indications, the main bunch of lead ore will be found under the southern slope, and more particularly under the river and south dipping, in that direction. In order to do justice to this property, it will be necessary to erect a powerful engine, not less than 60-horse, near the mouth of the present adit, and sink at once to the 500 fm. level. According to the present favourable appearance of the adit, a very good bunch of ore will be discovered at this depth. I believe it will be necessary, in the course of time, to sink diagonally in the direction of the shoot of ore south, similar to the plans they have adopted at the Tamar Mines; however, this question may be left until the workings are sunk to the 50 fm. level. The copper lodes, to the extent of their productiveness near the intersecting, will be developed the same time. The composition of the lode is exceedingly favourable for lead ore in the southern slope; there is doubtless a hard bar of unproductive ground to the north; be this as it may, I think, with a good steady management, and a system of working judiciously laid down and followed up, this may be rendered a very good mine.

COMPANY OF COPPER MINERS IN ENGLAND.—The result of the meeting of the securities on Saturday last, at Messrs. Crowder and Maynard's, has not yet transpired. It has been, however, determined to submit certain proposals to the Bank of England, which will, probably, be determined upon next week.

CAMBORNE CONSOLS MINING COMPANY.—The general meeting of shareholders appointed to be held on Thursday last, was adjourned until Thursday next, the 24th inst., there being only three shareholders present, which number was not sufficient to constitute the proceedings valid.

EAST BIRCH TOR.—We understand that reports of a most gratifying character have just been received from the mine captain. The discovery consists of tin of the richest description at a very shallow depth, fully bearing out all former anticipations, and has created quite a sensation among those interested.

WHEEL ARTHUR.—The lode in this set (about six miles from Truro) runs parallel with East Wheel Rose lode, and is composed on the back of a very fine gossan, with rich carbonate and phosphate of lead; and in the 20 we have recently cut a rich bunch of blue lead, and have driven several fathoms in it, and is still continuing, mixed with carbonate, in a beautiful soft and congeal strata, with half a mile of soft flat ground a-head. The 30 is driving after the 20, being about 40 fathoms behind; and the lode in that end is 3 ft. wide, being all gossan.

Mr. Evan Hopkins, C.E., accompanied by St. Pierre Foley, secretary to the Mining Company of Wales, leaves London, on Monday next, on an extensive inspecting tour of the company's mines and quarries, and which will be reported on by Mr. Hopkins.

FOREIGN COPPER ORE.—The first importation from Algiers arrived at Swansea last week—180 tons having been consigned to Messrs. Bath and Son, from Philippeville; also 500 tons from Cuba; 300 tons from Africa; 100 tons from Bilbao; and a cargo this week from South Australia.

ACOUSTICAL PHENOMENA AT BRITANNIA BRIDGE.—Some of the acoustic effects produced by this bridge are interesting. The report of a pistol fired beneath the bridge is repeated three or four times. The rapid repetition of echoes from each of the T irons, on the side of the tube gives rise to a shrill whirling musical note. When any violent noise is produced on the adjacent shore, the note is the same, whether produced by the blows of the riveters or the report of a cannon, and corresponds to a low D on a concert flute. "The cells of the top and bottom," says Mr. Edwin Clarke, in his interesting work on *Tubular Bridges*, "form excellent speaking tubes, and conversation may be carried on through them, even in a faint whisper. By elevating the voice, persons may converse through the entire length of the bridge, a distance of more than 500 yards. If one end of the cells be closed, they return a powerful echo, but although a whisper is thus distinctly repeated, the loudest whistle does not appear capable of returning any echo."

THE WORKING OF ZINC NOT INJURIOUS TO HEALTH.—At the Paris Academy of Sciences, M. Sorel, replying to some authors who at preceding sessions of the academy had made observations tending to show that zinc was not innocuous, stated that for 15 years he had employed in his establishments for the galvanization of iron several hundred workmen, a large number of whom were occupied with pulverizing and sifting the gray or sub-oxide of zinc, for galvanic painting, and in no instance had any of the workmen of the establishment, although in the midst of an atmosphere containing much of the oxide, suffered at all from it. The white oxide of zinc had also been fabricated for some months, without any ill effects, although the men breathe considerable quantities of the oxide.

THE PITMEN AND THE INSPECTION OF MINES ACT.—A meeting of pitmen from various collieries on the Tyne and Wear was held on Saturday last, on the Newcastle Town-moor. About 1000 persons were present. A. Stoves, a pitman and lecturer, presided, a waggon having been provided for the accommodation of the speakers. Their names were, Wm. Thirlwell, of Seaton Delaval; R. Hodgson; W. Daniel, delegate from North Staffordshire; J. Hall, of Seaton Delaval; J. Price, delegate from Lancashire and Cheshire; James Smith, and J. Fawcett. The speakers generally expressed thankfulness for the measure which passed the Legislature last session, for a general inspection of coal mines, and resolutions were adopted pledging the meeting to petition Government to regulate the hours of labour in coal mines, limit the period of labour to eight hours, and to provide uniform weights and measures. Thanks were voted to Mr. Wyld, M.P., Mr. Hume, M.P., and Mr. Headlam, M.P., and other friends, for their services in Parliament, and to Mr. J. Mathar and the South Shields Committee for their efforts on behalf of the pitmen. Thanks were then voted to the chairman by acclamation, and the meeting broke up.—*Newcastle Chronicle*.

ACCIDENTS.

Wheel Mary Ann.—A miner, named Lawry, was killed, and a companion seriously injured, by the falling of a rock in one of the levels.

North Wales.—Three miners were destroyed, and others severely injured, by an explosion in pits near Wrexham.

Colliery Explosion at Oldham.—The inquest on the 16 unfortunate individuals who were killed by an explosion of foul air in one of the levels in the mine, caused by a fall of earth from the roof upon a safety-lamp, which broke away the gauze-work, and brought the flame in contact with the inflammable gas collected in the workings, terminated in a verdict of "accidental death." On carefully perusing the evidence, it appears that no blame could be attached to any parties connected with the mine. Mr. Butterworth, the owner, being in the habit of visiting the colliery; and, according to the statement of one of the witnesses, sharing the danger with them—in fact, his own brother and nephew were at work the time the occurrence took place. At present, there is no air shaft to the mine, but one has been sunk about 60 yards; and a new fan was preparing for the mine, larger than the present one, with a view of better ventilating the workings.

Explosion at the Muirkirk Iron-Works, near Glasgow.—On Friday night, about 11 o'clock, the inhabitants of the village of Muirkirk were alarmed by a violent explosion at the iron-works. It appears that the gas having collected in the heated pipes, during a temporary stoppage of the blast, and flowing into the main pipe and receiver, exploded; it shattered them in a thousand pieces, burst in the windows of the engine-house and dwelling-houses near at hand, and carried large pieces of iron into fields in the neighbourhood. From the lateness of the hour at which the explosion occurred, happily but few of the labourers were in the works; one man was killed, and another injured, but fortunately not severely. It was supposed at first that the accident had arisen from the recent application of taking gases from the furnace by means of pipes, and conveying it to the heaters and boilers, thereby saving the coal formerly required for heating the air and raising the steam from the blowing engine; on examination, this was found not to be the case. The works will again be in operation as early as possible.

Merthyr.—A Roberts, while working in one of the levels, struck into an old working, and, not thinking of foul air, put his candle to see what was beyond him, when the fatal "damp" ignited, and caused his death.

Pendyarnen Works.—A serious accident occurred by the fall of a large portion of the top in one of the levels, greatly injuring several workmen, though we are happy to learn none of them were fatally injured. Every assistance was made to rescue the unhappy men from their perilous situation, and medical aid obtained to give relief to their sufferings.—*Monmouthshire Merlin*.

The New Bill.—An inquest was held on the body of William Jones, aged 15, who, with others, was descending the Pontop South Pit in the cage. There was a sudden check, and a light was called for, when a man climbed up the from Hutton seam, a few yards below, and it was found that Jones, having put his head out of the cage, had got jammed by the buntings, and was killed. The viewer had sent off a notice to the Secretary of State, pursuant to 13 and 14 Viet., cap. 100; and, under the rigid, unrelaxing requirements of that statute, the coroner had no option but to apprise the Home office of the inquiry, and adjourn it. The set will have to be amended, adjournments being in most instances superfluous.—*Gateshead Observer*.

William Walton, while recently descending the shaft of Lambley colliery, near Hall-whistle, with timber (a practice reproached by the jury), fell out of the corf, and was killed.

William Bruce, a pit-boy, was killed by the falling of a tub.

Brierly Hill.—Death of a Child by falling down a Pit.—Easter Ballinson, about five years old, daughter of W. Ballinson, collier, was sent with her father's breakfast to a pit in the neighbourhood of Bromley, when, not returning home, search was made, and during the same evening the lifeless body of the ill-fated child was found by John Brooks, down an old shaft of a pit belonging to Mr. Cox, at Bromley, and into which it is supposed the little unfortunate must have accidentally fallen on her return.—*Birmingham Journal*.

Explosion of Fire-damp.—Early on the morning of Tuesday, as the men at the Trough Colliery, near the Nine Locks Works, Brierly-hill, were about to commence work an explosion of gas took place, by which five men, named J. Attwood, B. Shaw, J. Webb, U. Capewell, and J. Shakspeare, were more or less burnt, though not dangerously. The accident occurred through the careless of the latter person, he having very inconsiderately taken a lighted candle into that portion of the pit (a gate road), where the gas had generated, without first using the safety-lamp.—*Worcester Chronicle*.

THE LEAD TRADE.

PRODUCE OF LEAD ORE AND LEAD IN THE UNITED KINGDOM, FOR THE YEAR 1840.

By ROBERT HUNT, Esq., Keeper of Mining Records.

Tot. of Lead.	County.	Mines.	Lead Ore Returns.	Lead Returns.	Tons lead. Districts.
Tons.			Tons cwt.	Tons cwt.	
ENGLAND.					
6,791-0	Cornwall	Callington	625 0	422 0	
		Huel Mary Ann	872 0	635 0	
		Huel Trelawny	1296 11	934 0	
		Huel Trehan	439 12	290 0	
		Tregodan	28 16	20 0	
		Herodscombe	1050 0	630 0	
		East Huel Rose	4758 15	2886 0	
		Huel Penhale	50 0	35 0	
		Huel Golden	80 0	56 0	
		North Huel Rose	75 14	46 0	
		Cargoll	308 3	203 0	
		Ormsay	269 0	164 0	
		Huel Rose	107 0	70 0	
		Cubert	102 0	61 6	
		Holmbush	—	—	
		Leman	—	—	
		Great Calstock Moors	—	—	
		Huel Concord	—	—	
		Calstock	—	—	
		Cartmel Consols	43 0	31 0	
1,219-0	Devonshire	Tamar	1106 0	636 0	
		Huel Adams	382 0	210 0	
		East Tamar Consols	336 0	—	
		Huel Friendship	3 0	3 0	
		Lydford Consols	—	—	
		South Tamar Consols	176 0	123 0	
7,178-7	Cumberland	Brownhill	582 18	407 0	
		Rampgill	418 10	292 0	
		Scaleburn	169 17	119 0	
		Carrs and Hanging Shaw	174 7	122 0	
		Capel Clough	400 16	280 0	
		Smith Clough	35 1	24 0	
		Middleclough	47 7	33 0	
		Guddamgill	46 0	32 0	
		Long Clough	2224 10	1554 0	
		Bentfield Sun Vein	26 18	18 0	
		Cowperdyke Heads	80 18	56 0	
		Cowhill	4 10	2 0	
		Bentfield Sun S. E. End	105 0	73 0	
		Brigal Burn	309 0	146 0	
		Brownley Hill	252 0	176 1	
		Blagill Vein	63 6	46 0	
		Carrs West of Nent Vein	30 4	21 0	
		Black Syke	18 12	12 0	
		Hudgill Burn	14 0	10 0	
		Fore Shield	24 5	17 0	
		Farnbury Vein	28 19	20 1	
		Grasfield	34 17	23 1	
		Garrigill Syke	132 2	92 0	
		Drygill Mine	50 2	30 0	
		Greensides	1820 0	1300 0	
		Woodend	32 0	23 0	
		Force Cragg	27 6	18 0	
		Kewick Mine	56 16	35 0	
		Hudgill Burn	160 13	112 0	
		Calvert	16 4	11 0	
		Holyfield	16 4	11 0	
		North Grain Cross Vein	0 16	0 4	
		Crossfield Mine	185 0	97 0	
		Thorngill West End	29 4	20 0	
		Wellgill Cross Vein	87 16	60 0	
		Rodderup Clough, West End	1297 12	908 0	
		Tyne Bottom	37 0	27 0	
		Dowke Burn, West End	86 16	60 0	
		Morley Fell	17 13	12 0	
		Rodderup Fell	1152 0	801 0	
		Sundries under 10 tons	62 0	38 0	
13,215-6	Durham & Northumberland	East and West Allendale	13362 0	9162 0	
		Weardale	3404 8	2576 0	
		Teesdale Mine (including South Yarnbury)	—	—	
		Silver Tongue	1389 0	1001 0	
		Stanhope Burn	80 0	51 0	
		Hollywell	13 17	8 5	
		Lane Head	—	—	
		Aller Gill	—	—	
		Bollhope	8 8	5 1	
		Fallowfield	134 16	88 0	
		Whitfield	80 17	54 0	
		Settling Stones	440 0	260 0	
		Pow Cross	7 0	4 0	
		Capton	9 12	6 0	
457-0	Westmoreland	Duffon and Silverband	601 12	457 0	
		Hilton and Marton	—	—	
4,420-0	Derbyshire	Sundry Mines	5800 0	4420 0	
2,315-0	Shropshire	Snailbeach	3196 0	2391 0	
		White Grit and Batholes	—	—	
		Bag Mine	20 0	14 0	
		Pennerley	—	—	
		Round Hills	—	—	
		Somersetshire, Mendip Hills	—	—	
5,596-18	Yorkshire	Swale Dale and Arkendale	4954 0	3648 0	
		Cononley	588 4	395 7	
		Grassington, including Garmbury and Coalgrove	1231 6	816 11	
		Beck	905 0	591 0	
		Pateley District	74 0	52 0	
		Nichdale	154 0	100 0	
		Kettlewell & Conistone Liberty	—	—	
41,192-11	Total		59,096 6	41,192 11	

WALES.

3,505	Cardiganshire	Llanurion Mines	2733 0	1864 0	1804
		Cwm-y-wyrt	583 0	333 0	
		Egalfir	—	—	
		Cwm-selion	55 0	33 0	
		Llanfair Clogau	2 6 0	134 0	
		Goginan	1150 0	766 0	766
		Gogerdan Mines	131 0	87 0	
		Nanty-y-creiau	—	—	
		Pen-y-bont-pren	12 0	7 0	
		Cwm-cwm-brwyne	10 0	7 0	
		Bwlch Consols	635 0	425 0	425
		Nantco	177 0	166 0	
		Aberystwyth (small mines)	31 0	20 0	
		Llanymaron	—	—	
		Llanbadarn	—	—	
		Brynarian	40 0	28 0	
		Cwm-erfn	116 0	78 0	
		Daren	29 0	20 0	
		Eisteddfod	29 19	14 0	
		Llyn Maly	32 0	21 0	
		Bwlch-cwm-erfn	18 0	12 0	
19	Carmarthen	Llanwrst	18 0	10 0	
		Penryn-du	—	—	
		Lilweid (Snowdon)	12 0	9 0	
3,180	Carmarthen	Nanty-y-wyn	1775 10	1189 0	1189
		Denbighshire	—	—	
7,448	Flintshire	Maes-yr-erw-ddu	1470 0	916 0	916
		Talargoch	1213 0	825 0	
		Fronowog	1013 0	811 0	
		Maes-yr-afn	995 0	726 0	
		Pen-yr-henblas	1044 0	731 0	
		Mold Mines	154 0	118 0	
		Long Rake	68 10	38 0	
		Milwr	642 0	469 0	
		Penyryn	—	—	
		Dingle and Deep Level	1136 0	829 0	
		Parry's Mines	—	—	
		Westminster Mines	585 0	380 0	
		Halkin Hall	20 0	13 0	
		Bodelwyddan	15 0	10 0	
		Belgrave	33 0	24 0	
		Bryn-gwyrog	—	—	
		Holywell Level	14 0	10 0	
		Jamaka	610 0	433 0	
		Bwlch-y-ddafryn	—	—	
		Billings	20 5	10 0	
		Cwm-milla	23 0	11 0	
		Aberdun	65 10	46 0	
		Bryndgri	29 10	15 0	
		Gyrra	11 15	8 0	
		Pant-da	14 0	10 0	
		Pant-y-colyn	216 0	131 0	
		Pant-y-groes	29 0	14 0	
		Pant-y-ne	12 5	8 0	
		Pant-y-fryth	40 0	28 0	
		Strong Croft	13 0	9 0	
		Sundries (under 10 tons)	115 10	81 0	
		Talsarn	610 0	430 0	
		Pentre Glase	87 0	61 0	
		Level Newydd	22 9	22 0	

WALES—Continued.

Tot. of Lead.	County.	Mines.	Lead Ore Returns.	Lead Returns.	Tons lead. Districts.
Tons.			Tons cwt.	Tons cwt.	
WALES.					
868	Montgomeryshire	Llangynog	17 0	10 0	
		Cae-conroy	189 10	118 0	
		Rhowydol	98 0	57 0	
		Dwn-gwm, or Dyngwm	31 0	15 0	
		Craig Rhiwarth	28 0	17 0	
		Bryndail	76 5	34 0	
		Gorn	48 0	34 0	
		Machynlleth, including Delib	385 0	265 0	
		Nantmelny	30 0	21 0	
		Pant-y-clyd	117 0	82 0	
42	Merionethshire	Barmouth (Port of)	—	—	
		Cowarth	—	—	
		Tyddynghwladus	—	—	
		Dolgelly	18 0	11 0	
		Eagles Rock	40 0	24 0	
		Bwlch-y-Piwm	11 0	7 0	
13,401	Total		19,731 0	13,389 0	

The Welsh ticketings include also the following Foreign Ores:—

South Australian	Tons	574
German	Tons	20

IRELAND.

21-0	Clare	Kilbricken	—	—	
		Ballynicky	—	—	
		Castleblayney	30 10	21 0	
924-0	Down	Newtownards	1300 0	726 0	
		Conlig	347 0	198 0	
14-0	Cork	Bantry	24 0	14 0	
197-0	Limerick	Shalloe	329 0	197 0	
		Monaghan	—	—	
		Bond and Newry	—	—	
593-14	Wicklow	Glenmalur	45 0	30 0	
		Luganure	471 0	329 14	
		Wicklow	48 10	34 0	
104-0	Waterford	Barristown	144 0	104 0	
1,653-14	Total		2638 10	1653 14	

SCOTLAND.

151-0	Ayrshire	Afton Lead Mines	—	—	
		Strontion Mines	250 15	151 0	
		Dumbarton	—	—	
866-3	Kirkcudbright	Caernarvon	575 0	380 0	
		Woodhead	353 0	261 3	
		Black Craig	243 0	165 0	
		Lead Hills Mine	—	—	
		Dumfriesshire, Wanlock-head	—	—	
907-3	Total		1421 15	907 3	

ISLE OF MAN.

1,535-1	Isle of Man	Isle of Man Mining Co.	1527 0	658 0	
		Laxey	815 0	546 0	
		Douglas	394 10	261 0	
		Sundry ores	90 0	60 1	
1,535-1	Total		2826 10	1535 1	

TOTAL QUANTITY OF LEAD ORE RAISED, AND LEAD SMELTED, IN THE UNITED KINGDOM IN 1840:—

	Lead Ore.	Lead.
	Tons cwt.	Tons cwt.
England	59,096 6	41,192 11
Wales	19,731 0	13,389 0
Ireland	3,638 10	1,653 14
Scotland	1,421 15	907 3
Isle of Man	2,826 10	1,535 1
Total	86,716 1	58,727 9

LEAD ORE AND LEAD IMPORTED AND EXPORTED DURING 1840:—

	Lead Ore.	Lead.
	Tons cwt.	Tons cwt.
Fig and sheet	—	1381
White lead	44	—
Retained for home consumption	5265	—
EXPORTED.		
Fig and rolled	10,327	181
Shot	1,798	—
Litharge	502	—
Red lead	1,521	—
White lead	1,673	—

PRODUCE OF LEAD ORE AND LEAD FOR THE UNITED KINGDOM DURING FIVE YEARS:—

Years.	Lead Ore.	Lead.
	Tons.	Tons.
1845	78,267	52,695
1846	74,564	50,161
1847	83,747	55,703
1848	77,864	54,853
1849	86,716	58,727

SMELTING IN SOUTH AUSTRALIA.—We have just received the prospectus of the Britannia Mining Company, which is now forming in South Australia. The directors comprise some of the most influential gentlemen in the colony. The mineral lands of the company are situated in the neighbourhood of the Kanmantoo and Parana mineral sections, which have already produced some quantities of ores. The property belonging to the company consists of about 7000 acres; this is situated in the centre of the mineral district. As only the better ores have been exported to England, an accumulation of ores of a low percentage is laying at the several works. Fuel for reduction, and fluxes, if necessary, can be obtained at a cheap rate; and when it is taken into consideration the low priced ores which are smelted here, it must be a good investment for capital to smelt on the spot. The ores laying there would return a remunerative profit, though, in their present state, they cannot bear the expensive land carriage, and the heavy freight to England, added to the smelting charges here.

CLUB FOR ALL NATIONS.—A preliminary meeting of foreign merchants and shippers of the port of London was held at the London Tavern, Bishopsgate-street, on Thursday, at which it was resolved that the removal of the commercial and shipping restrictions, and the great Exhibition of 1851, would naturally bring an immense number of foreign merchants to the metropolis, and it was therefore desirable, as the means of facilitating intercourse between those gentlemen, that a club of all nations should be established in London, to be provided, in addition to the usual club accommodations, with interpreters acquainted with all the languages of the East and of Europe, guides and commissioners, and departments for information. A committee of gentlemen, merchants of London, was elected to carry out the undertaking.

MONSTER GASOMETER.—A large gasometer is being constructed at Philadelphia, in a telescopic form, with two sections. The dimensions are 140 feet diameter, and 70 high, and is calculated to contain 1,000,000 cubic feet.

A number of workmen are employed in fixing a wire from the Bastille to the Madeleine, as an experiment for a new company that has proposed to establish an electric telegraph throughout Paris for the transmission of messages.

RAILWAY TRAFFIC.—The gross traffic for the 16 weeks which have elapsed since the 1st of July, amounts, on 5821 miles, to 4,180,015, which shows an average of 7182 1s. 10d. per mile. The average last week was 6704 19s. 7d. per mile, indicating an advance for the United Kingdom of 471 2s. 8d. per mile. The gross traffic for the same period of sixteen weeks last year, on 4982 miles, amounted to 3,598,154, which was equal to an average of 7221 4s. 7d. It will thus be seen that the 839 miles of difference have created a deficiency of 42 2s. 9d.

BRITISH MINES—Continued.

Sh. area.	Company.	Paid.	Price.
087	Tary Consols (copper), near Tavistock	9	34 3/4
090	Tincroft (copper and tin), near Pool, Cornwall	7	12 1/2
128	Tolcarn (tin and copper), Camborne, Cornwall	8	12 1/2
1034	Tranbeck United Mines (tin and copper), Helston, Corn.	1	6 1/2
3048	Trabell Consols	1	12 1/2
512	Trebruge United (lead), St. Teath, Cornwall	1	12 1/2
5090	Tregertha Consols (antimony and silver-lead), St. Kew	1	2 1/2
226	Tregurden (silver-lead) near Bodmin, Cornwall	10	7 1/2
256	Trethelney (silver-lead), Menheniot	1	16 1/2
5090	Trevelick Consols (copper), Redruth	6	3 1/2
1024	Trevelick, Stithians, Cornwall	1	5
160	Trevelick Consols (tin), St. Ives, Cornwall	7 1/2	20
2000	Trevelick (copper), Helston, Cornwall	6	7 1/2
1500	Trevelick (lime quarries)	2 1/2	3 1/2
56	Trevelick (copper), Gwennap	1	130
120	Trevelick (copper), Gwennap	5	20 1/2
120	Trevelick and Barter (copper), Gwennap, near Redruth	180	255
512	Trevelick (copper), St. Cleer, Cornwall	5 1/2	5
512	Trevelick (lead), Lewannick	1 1/2	6 1/2
1000	Tylywyd (lead), Cardiganshire	2	2 1/2
500	Tywarhayle (copper), Illogan and St. Agnes	50	45
500	United Mines (copper), Gwennap	50	140
5000	Warleggan Consols (copper), Cornwall	1	5
1024	Wellington Mines (copper and tin), Pervannish, Corn.	6 1/2	14 1/2
128	West Buller (copper), Redruth, Cornwall	10	590
256	West Caradon (copper), Liskeard	20	93 96
512	West Fowey Consols (tin and copper), St. Blazey	40	60
2048	West Goginan (silver-lead), Cardiganshire	1 1/2	2 3
1024	West Far Consols (copper), St. Blazey, Cornwall	5	5
2500	West Fowey (tin), St. Ewe and St. Mewan, Cornwall	5	7
512	West Frovith (tin), St. Erth, Cornwall	5	23
300	West Soken (copper), Camborne, Cornwall	45	140
120	West Trevelick (copper), Gwennap, Cornwall	5	20
512	West Wheel Frances (copper), Illogan, Cornwall	1 1/2	15 1/2
1024	West Wheel Friendship (copper), Devon	3	3 1/2
2048	West Wheel Jewel (tin and copper), St. Day, Cornwall	12	23 1/2
940	West Tolgus and Treloar (copper), Illogan, Cornwall	12 1/2	7 1/2
500	West Wheel Towan (copper), Illogan, Cornwall	7	11 1/2
1024	West Wheel Treasury (copper), Gwennap, Cornwall	11 1/2	5 1/2
1024	West Wheel Virgin (tin), Sancerre, Cornwall	2	5
5200	Wicklow (copper), Wicklow, Ireland	5	18
5000	Wicklow (copper and sulphur), Wicklow, Ireland	3	34 3/4
107	Wheel Adams (lead), Christow, Exeter	100	150
1000	Wheel Agar (copper), Illogan, Cornwall	1	5 1/2
256	Wheel Albert (copper), Cornwall	10	38 29
128	Wheel Ann (tin), near Helston, Cornwall	1	50 1/2
300	Wheel Arthur (lead), near East Wheel Rose, Cornwall	17	50
120	Wheel Bal (tin), St. Just, Cornwall	10	22
256	Wheel Bann (copper), Calstock, Cornwall	19 1/2	5
1024	Wheel Bray (copper), Altarnun, Cornwall	11 1/2	11
233 1/2	Wheel Calstock (copper), Calstock, Cornwall	9	10
256	Wheel Carpenter (tin and copper), Gwennap, Cornwall	1	12
256	Wheel Courtenay (copper), Cornwall	20	23
1024	Wheel Crebor (copper), Tavistock, Devon	1 1/2	3
500	Wheel Daniel (copper), Chacewater, Cornwall	5	5 1/2
182	Wheel Elizabeth (copper), Redruth, Cornwall	9	52 1/2
1024	Wheel Emily (lead and antimony), near Plymouth	3	51 1/2
1024	Wheel Fortescue (copper), near Tavistock, Devon	4 1/2	1 1/2
764	Wheel Franco (copper), near Tavistock, Devon	27	8 1/2
100	Wheel Friendly (tin), St. Agnes, Cornwall	70	65
128	Wheel Friendship (copper), Devon	1	120
4000	Wheel Golden (lead), Pervannish, Cornwall	2	5 1/2
1000	Wheel Golden-Grove (tin), St. Columb Major, Cornwall	5	5 1/2
1000	Wheel Grose (silver-lead, copper, &c.), near Wadebridge	4	1
2560	Wheel Harriet (copper), Camborne, Cornwall	1	3
1024	Wheel Hamlyn, near Oakhampton, Devon	1	1 1/2
2048	Wheel Harris (lead), near Tavistock	1	4
100	Wheel Henry (copper), Kea, near Truro, Cornwall	1	40
256	Wheel Kingston	1	12
6000	Wheel Langford (copper and silver-lead), Callington	1	12 1/2
3000	Wheel Langmaid (lead), Devon	1	5 1/2
112	Wheel Margaret (tin), Uye Lelant, near Hayle	70	170 1/2
1024	Wheel Mary (silver-lead), Botes-dimming	1 1/2	1
512	Wheel Mary Ann (lead), Menheniot	5	51 52
1024	Wheel Neptune (copper), Perranuthnoe, Cornwall	1	1 1/2
1000	Wheel Oak, near Helston, Cornwall	1 1/2	1 1/2
3000	Wheel Penhale (lead and copper), Cornwall	2	6
128	Wheel Plenty (copper), Redruth, Cornwall	19	38 39
128	Wheel Pollard (copper), St. Cleer, Cornwall	15 1/2	7
210	Wheel Prospect	4	120
120	Wheel Rake (copper), St. Ives, Cornwall	4 1/2	120
1024	Wheel Russell (copper), Tavistock	4	4
194	Wheel Seton (copper), Camborne, Cornwall	107	230
1056	Wheel Sarah (silver-lead), St. Kew, Cornwall	5	6
512	Wheel Sophia (silver-lead), Lezant, Cornwall	63	7
128	Wheel Squire (copper), St. Erth, Cornwall	1	5
1000	Wheel Susan, Breage and Crownan, Cornwall	4	2
512	Wheel Trefusis (copper), Gwennap, Cornwall	4 1/2	5 1/2
1100	Wheel Trevelick (tin), Lantivel, near Bodmin, Cornwall	6 1/2	5
320	Wheel Trevelick (silver-lead), near Liskeard, Cornwall	31	44 45
256	Wheel Tremayne, St. Ervan, Cornwall	9 1/2	2 1/2
1024	Wheel Tremayne (tin and copper), Gwennap, near Hayle	9 1/2	15 1/2
267	Wheel Tryphena (tin and copper), Camborne, Cornwall	40	62 1/2
126	Wheel Union (copper), Redruth, Cornwall	1	38 40
512	Wheel Venton (lead), Cornwall	2 1/2	4 1/2
1000	Wheel Vincent (tin), Altarnun, Cornwall	5 1/2	7
128	Wheel Violet (lead), St. Stephens, Cornwall	15	14 1/2
128	Wheel Violette (lead), St. Stephens, Cornwall	3	5
43174	Wheel Wyvyan (copper and tin), Constantine, Cornwall	24 1/2	61 62 7 1/2
10000	Worthing (copper), Adelaide, South Australia	2	2

FOREIGN MINES.

Sh. area.	Company.	Paid.	Price.
5000	Altan Mining Company (copper), Norway	14 1/2	1 1/2
12000	Annotto Bay Mining Association, Jamaica	1	1 1/2
15000	Astorian Mining Company (copper), Spain	15	12 1/2
20000	Australian (copper), South Australia	4	3
6000	Barron Range (copper), South Australia	1 1/2	2
10000	Brazilian Imperial (gold), Brazil	23	6
12000	Cobre Copper Company (copper), Cuba	40	32 1/2
10000	Copiapu Mining Company (copper), Chile	14	42 1/2
20000	General Mining Association (iron & coal), Nova Scotia	20	12 1/2
5000	Kinzigthal Mining Association (silver), Germany	2	2 1/2
5000	Linares (lead), Spain	3	2 1/2
500	Diito New	3	3
5001	Mexican Company (silver), Mexico	59 1/2	1
20000	Mexican and South American (silver), Mexico	8	1 1/2
5000	National Brazilian (gold), Brazil	30	34 1/2
104000	North British Australian (copper), S. A. & New Zes.	1	8
7000	Royal Santiago (copper), Cuba	10	91 10 1/2
11000	St. John del Rey (gold), Brazil	15	14 1/2
43174	United Mexican (silver), Mexico	24 1/2	61 62 7 1/2
10000	Worthing (copper), Adelaide, South Australia	2	2

PRICES OF MATERIALS.

As charged at Sney Park Mines during the following months:—

DESCRIPTION.	JULY.	AUGUST.
Coal, carriage included	13s. 6d.	13s. 6d. per ton.
Timber, balk	0 10	0 10 per foot.
Iron, common	5 9	— per cwt.
Do, faggoted	10 0	10 0
Do, hoop	10 6	10 6
Rope	—	34 0
Hemp	—	0 4
Tallow	39 6	— per cwt.
Oil, rape	3 9	— per gall.
Do, patent	4 4	—
Nails, 4-inch patent	16 6	— per cwt.
Do, 5-inch ditto	15 6	—
Do, 6-inch ditto	15 0	—
Powder	26 0	30 6 per 100 lbs.
Candles	4 2	4 2 per dozen.
Hills	1 4	1 4
Safety fuse	0 3	0 3 per coil.

CORNISH STEAM-ENGINES.

The number of pumping-engines reported for the month of Sept. is 25—the quantity of coals consumed being 1869 tons, lifting, in the aggregate, 17,000,000 tons of water 10 fathoms high—the average duty of the whole is, therefore, 51,000,000 lbs. lifted 1 foot high by the consumption of a bushel of coal.—The following have exceeded the average:—

Mines.	Engines.	Length of stroke.	Lead in pounds.	Load per sq. inch on piston.	Strokes per min.	Consumption of coal, in bus.	Millions lifted 1 foot 1 foot of coal.	Lifted by 1 c.
Great Work.	Leed's 60-in.	9'0"	55,343	15'2"	6'9"	1920	56'0"	67
East W. Croft.	Trevenson's 80	10'3"	82,333	12'2"	4'9"	2022	63'1"	75
Poldice	Sims's 85-in.	10'3"	84,120	10'3"	7'3"	3032	59'9"	72
S. W. Frances	75-in.	11'0"	87,800	10'7"	3'8"	1368	60'0"	72
United Mines	Taylor's 85-in.	11'0"	97,436	15'6"	5'3"	3900	64'0"	77
Do	Cardozo's 90-in.	9'0"	100,693	12'8"	6'0"	3416	56'5"	67
Do	Edison's 30-inch	9'0"	12,651	16'0"	8'5"	843	64'5"	77
Do	Loam's 85-in.	10'0"	97,817	11'6"	6'2"	2943	56'2"	77
Do	Hooking's 85-in.	10'0"	97,817	14'4"	6'6"	3951	59'5"	66
Tywarhayle.	Gardiner's 60-in.	10'0"	76,330	12'2"	7'1"	3168	55'7"	67
East W. Frances	70-in.	10'0"	78,814	18'4"	4'1"	2030	60'1"	72

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars, per oz. £2 17 9 New dollars, per oz. £2 4 10 1/2
Portugal pieces, 0 0 0 Silver in bars (standard), 0 5 0 1/2

NOTICES TO CORRESPONDENTS.

* We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

THE DEVON GREAT CONSOLS.—We regret that Mr. Marchison's interesting article is unavoidably postponed till NEXT SATURDAY.

"A Manchester Reader."—The price of English pig lead at present varies from 16s. 15s. to 17s. 10s. per ton, that of Spanish in bond at about 16s. The ore of lead are valued according to the quantity of silver and the per centage of lead which they contain. On referring to the sales of lead ore reported in our columns, it will be seen that various prices are given for ores which are all the produce of the same mine. This arises, in many cases, from the better quality of the ore, in others from superior dressing, and the labour employed in raising the inferior sorts to a higher per centage. Where this does not pay the cost of labour, the ore is but slightly dressed, and sent to market as an inferior kind.

The communication of Mr. A. Savage, on the Exhibition of Works of all Nations, having been inserted in several of our contemporaries, cannot appear in our Journal.

"D."—The Electric Telegraph Company have no power to prevent any person from putting up wires, &c., or working instruments, providing they do not in any way infringe upon their patents.

The letter of "An Enemy to Humbug" (Truro), without effecting any good—"the mischief being done"—would compel us to devote much space for a reply.

"D."—Dr. Murray, in his "Memoirs on the Diamond," states that the diamond mines of the Brazil were discovered about the middle of the last century. Many curious bright stones were discovered by some miners when in search of gold. They were used as counters for cards, and some being sent to Lisbon, their real value was soon discovered and determined.

"W. G." (Manchester).—We have no doubt our correspondent would meet with an engagement by advertising—the charge for which would be 5s.

"A Shareholder" (Strand).—In the report of the Tamar Silver-Lead Mining Company, read at the meeting, held on the 7th instant, it states that the chimney is 690 feet long, not "high," as our correspondent has erroneously read; this seems overdrawn to those who have not been on these works, or those of a similar description; many of the stacks in the smelting works in Wales are much longer. A rough sketch was on the table, showing the plan of the engine, and rendering it perfectly comprehensible, though we willingly believe those not thoroughly conversant with mining operations may not fully understand the report. The manager is a gentleman of acknowledged talent, and we believe uses his utmost exertions to advance the interests of the properties he is connected with. Want of capital has decidedly cramped the concern, and we believe, judging from the reports, that both mines and smelting works will ultimately prove advantageous to the shareholders. Had our correspondent attended the meeting, we have no doubt every explanation would have been afforded to him, and expressions which, from their technicalities, appear mystifications and unintelligible, would have been perfectly clear and satisfactory. We endeavour to give faithful reports of all meetings, but it would be perfectly useless to give, in *extenso*, all the desultory conversation which ensues consequent on queries and answers.

"A Subscriber" (Leek).—We should be glad to receive the particulars; we are at all times thankful for local intelligence.

Salt, up to the year 1823, was burdened with a duty of 15s. per bushel, and the gross quantity consumed in England was 296,000 tons. In 1825, with a duty reduced to 2s., the consumption became 342,000 tons. Since that period the article has been free, and the export price is now about 3s. per cwt.; while the quantity produced merely to satisfy the foreign demand has nearly reached 10,000,000 bushels for the seven completed months of 1850.

"A Miner" (St. Austle).—We must decline to recommend any particular course, as "the best," for our correspondent to adopt, to "dispose of some shares in one of the best copper mines in the world." A Miner had better apply to some broker (the address of several appear in our advertising columns), who will advise him. Something more than his word, and a few strangely vague reports, will be required, to satisfy parties of the value of the sett, previous to embarking their capital.

"G. F. M." (York).—Alston Moor, in Cumberland, is the only known locality of barite calcite. In the lead mines there it is met with in considerable quantity, and occasionally in crystals, which exceed an inch in length; but the large crystals often suffer decomposition, and are converted into a white mealy-like mass, resembling barites. It was first described by Brooke; it is either transparent or translucent, with a vitreous or resinous lustre and white streak. Before the blow-pipe, by itself it does not fuse; but with borax in the oxidizing flame affords a diaphanous globule of a light smoky tinge, which becomes colourless in the reducing flame. It effervesces briskly in nitric or muriatic acid.

* It is particularly requested that all communications may be addressed—

TO THE EDITOR,

Mining Journal Office,

26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL.
Railway and Commercial Gazette.

LONDON, OCTOBER 19, 1850.

THE MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all newsagents, at the Royal Exchange, and other parts of London.

The quarterly meetings of the ironmasters terminated at Dudley, on Saturday last: as might have been anticipated, they were merely a confirmation of the previous meetings at Wolverhampton and Birmingham. The proposition of the Welsh ironmasters to reduce the make was received with cordial approbation, and it was considered a matter of necessity that production should be diminished for the next quarter. On the 14th, one of the most respectable firms of South Staffordshire (Messrs. THORNTON & CO.) issued a circular, announcing a reduction in price of 10s. per ton, and 10s. per ton further allowed as commission on bars, hoops, and sheets. When a large firm such as this takes the initiative in the reduction of price, and which has been supplying an almost exclusive article, thereby obtaining a species of monopoly in the trade, we must confess that we fear it will be some period before the iron interest returns to that healthy and sound state which is so conducive to the well-being and prosperity of any branch of industry, and more especially to that which may be considered as one of the great staples of commerce, and sources of national wealth. On referring to statistical accounts, we find that the make of malleable iron in 1845 was calculated at 35,000 tons, and the average price for the year was 9s. 5s. per ton, while in 1849 the production had increased to 80,000 tons, at an average price of 5s. 17s. 6d., the price of pig iron averaging in 1845 4s. 0s. 3d. per ton, and in 1849 2s. 6s. 1d. We have no doubt the prices given in 1845 and 1846, during the excitement attendant on the railroad mania, were highly remunerative, and probably led many to erect works, in the delusive hope that the demand would be permanent. If, however, iron, as we were informed, in those days was made as cheap as possible, only returning a fair profit, by a parity of reasoning, it will be seen how much must have been lost during the last three years, while the prices have been so low; and one would suppose that sufficient was obtained in the good years to enable them to contend with the less fortunate periods. We are aware how difficult it is to endeavour to direct, or endeavour to control, the operations of any trade, and much greater so might an interest as that of the iron manufacturers, involving the prosperity or adversity of so many thousand individuals of all classes of society, who are dependent on the production of this most useful of all metals. To any one who has travelled through the iron districts, we need not say the contrast between the periods when trade is flourishing, and when depressed, where peace, contentment, and honest industry reigned, idleness, poverty, and disaffection, are seen rearing their hideous heads, with their concomitant evils—debauchery and crime.

It is not an individual case, affecting any peculiar interest, but one touching all parties living in those districts: by its magnitude, whether for good or evil, it has become an object of national importance, and we trust the time is not far distant when we shall see such regulations adopted as will prevent the iron trade from suffering from the fluctuations which it has experienced in the last few years. We are aware that the manufacturers have much to contend against at the present—a diminished demand for home consumption, and hostile tariffs abroad—but, we think, by a cordial co-operation with the dealers, makers, and labourers, that they may be able to struggle through the depression, and arrange the operations of the trade on a firmer and more secure basis.

On the 13th of April last, at the first quarterly meeting, we ventured to suggest to the ironmasters the propriety of reducing their make. We thought, as that was the spring quarter, and the summer approaching, that a change might be made, and the workmen would be better able to provide for themselves than at a more inclement period of the year, as we were fully convinced that some reduction must ultimately take place. This has now taken place; a reduction of the make is decided upon. The immediate consequence of this will be, that a number of furnaces must be put out of blast, and the labourers employed in connection with them must be discharged, with the prospect of the coming winter. The difficulties must have been great before such measures could have been proposed; but, we

think, if this resolution had been come to at an earlier period, when the workmen had hopes of obtaining other employment, that it would have been much better, both for masters and men. As it is, we trust the depression will not be for a long period, and that the coming year, to which so many look forward with glad and buoyant hopes, will shed the beam of its kindly influence over the ferruginous produce of Great Britain.

Our attention has been directed to the general feeling of disappointment which is felt throughout the district traversed by the SOUTH WALES RAILWAY, at the high "scale of tonnage rates," and the unequal way in which they are imposed. This is apparent on an inspection of the following tariff for first-class goods, such as coal, culm, iron, &c.:

	Miles.	Per ton.	Per ton per mile.
From Chepstow to Newport	17	9s. 5d.	6 1/2d.
" Cardiff	29	10 5	4 1/2d.
" Llantrisant	40	11 4	3 1/2d.
" Bridgend	50	12 2	2 1/2d.
" Port Talbot	62	13 2	2 1/4d.
" Neath	67	13 7	2 1/4d.
" Swansea	75	14 3	2 1/2d.
From Swansea to Neath	8	8 8	10 1/2d.
" Port Talbot	14	9 2	7 1/2d.
" Bridgend	26	10 2	4 1/2d.
" Llantrisant	35	10 11	3 1/4d.
" Cardiff	46	11 10	2 3/4d.
" Newport	58	12 10	2 1/2d.
" Chepstow	75	14 3	2 1/2d.

It will be observed that considerable ingenuity has been displayed in the construction of this tariff, so as to exclude the probable traffic from the line, and to favour that which has no existence. There is a considerable and constant traffic, both by the turnpike-road and the canal, between Swansea and Neath, and this would have been considerably increased had the railway terms been more reasonable. It is well known that the demand for bituminous coals is frequently greater than the supply in Swansea, and it was anticipated that this inconvenience would be remedied on the opening of the railway, by enabling parties to send coal to Swansea, who are at present shut out of that market. The charge from Neath to Swansea on the railway is *thirteen pence* per ton per mile, whilst it can be conveyed on the turnpike-road for *ten pence* per ton per mile! The principal goods traffic on the line is between Newport and Cardiff on the east, and Port Talbot, Neath, and Swansea on the west end; yet the directors have virtually rejected it, by issuing this prohibitory tariff. It must be observed, that the charges quoted above are on the lowest scale, and that general merchandise is charged one-third more than such goods can be carried for on the turnpike-road. It may be said, that under what is called "mileage rates," such articles as coal and iron may be conveyed on much more moderate terms—namely: "one mile to fifty miles, at 1 1/4d. per ton—which is certainly an approximation to a business-like demand; but, unfortunately, this redeeming trait is clogged with so many conditions as to present but little inducement for its acceptance.

One most important duty of any governing body is, so to profit by the warning afforded by any untoward occurrence, as to prevent the repetition of the evil; or, if that be impossible, to take such steps as shall tend to mitigate its injurious effects. With this impression on our minds, we wish to call the attention of the "powers that be" to a few observations that suggest themselves from the consideration of the late strike on the **EASTERN COUNTIES RAILWAY**. We are not going to wade through the whole of the proceedings, which must be fresh in the remembrance of our readers; we will merely glance at the main points of the transaction. Certain disagreements having occurred between the engine-drivers and firemen on the **Eastern Counties Railway** and their superintendent, the engine-drivers (by a deputation) waited upon one of the directors, with an announcement that unless the obnoxious superintendent be immediately removed they should at once resign. And, notwithstanding, the director to whom they applied requested them to wait until the board met, and took their case into consideration, within an hour the resignation of every engine-driver and fireman on the line was handed to the superintendent, with a notice that they should leave work in a week. Now, though the directors upon the receipt of this intelligence determined not to succumb, and eventually succeeded in overcoming the difficulties attempted to be thrown in their way, yet it was not without immense exertion, and probably at a loss, either directly or indirectly, of several thousand pounds. Even then they were compelled to suspend a number of trains per diem, though only for a week, yet seriously to the inconvenience of the public, and likewise to the manifest uneasiness of those who were compelled to travel by the line, from the very natural fear that the whole line being in the hands of strange drivers, some serious accident would be very likely to occur, though the directors adopted every precaution which laid in their power to obviate such a mischance, and we are happy to say to a great extent they succeeded.

Now, from this sample of the temper of the drivers, and their most audacious attempt to assume the reins of government, we are naturally started to find how much we are at the mercy of this class of men, should they succeed in forming an union to the extent they are evidently aiming at. We find that already about two-thirds of the mileage of existing lines of railway are in the hands of members of the **Drivers' Union**, and that they have paid agents—or as we may term them, agitators—continually travelling about, endeavouring to spread their doctrines and their Union. We need scarcely pause to point out the evils likely to result to the public, the shareholders, and, in fact, every one connected with railroads, should they be enabled to combine their efforts to the extent they meditate. They would at once become *de facto* the board of directors of all the railways in the kingdom, and we must confess that we consider a more dangerous movement to our social intercourse could not have taken place. We are but too well acquainted with the evils that must inevitably ensue in the case of any strike, though in ordinary cases, and with the general run of mechanics, let the strike be ever so general, it is not likely to lead to one tithe of the evils that it is on the rail; for, amongst mechanics generally, a strike can but act partially or locally, and the places of the deserters can generally be most readily supplied; but among engine-drivers the case is very different. From the nature and difficulties of their employment, it is evident that a man who once obtains a situation on an engine, and acquires a knowledge of the road on which he drives, is not likely to be parted with, except upon serious grounds. Now, as there is but a limited demand for this species of labour, and when once supplied it is rarely changed, it follows that there is small chance for surplus labour in this branch of industry; and, taking into account also the immense danger of putting inexperienced hands into such difficult positions, and the length of time required for a man to efficiently fulfil the duties required, we cannot help being alarmed at what may perchance be the consequences should a strict union be formed amongst this class of mechanics. In the late strike it was very evident that the contest was most severe, and for some time the event hung trembling in the balance, it being very doubtful which party would succeed. Fortunately, the cause of order triumphed, and we are for a time safe; but may we not fear that, warned by their past failure, the engine-drivers will combine more strenuously, and exert themselves to the utmost, to obtain proselytes to an object that holds out to such men the almost irresistible attraction of power? On the other hand, let us also be warned by the danger we have already incurred, to take such steps as may preserve us from a similar, or even, perhaps, more serious contest. We know well the difficulty that must ever attend the interference of the Legislature with the rights of labour, but we do think this a case of sufficient magnitude and importance to justify such interposition. We hold it to be equally disastrous—nay, more so—for a num-

That the result of the present very defective state of the patent system will be to render the forthcoming Exhibition, not an example of the extent of the ingenuity of all classes, but only of those individuals who have sufficient capital to patent their inventions.

That your petitioners have learned, with surprise and sorrow, that the recent Provisional Registration Act will not, as at first intended, and they were led to expect, facilitate the removal of these grievances, as it does not embrace patentable inventions, but only designs.

ANOTHER AMERICAN WONDER.—Our New York correspondent informs us that the "ninth wonder of the world" has been discovered in Wisconsin. It is a cave extending under the greater portion of two counties. *One field of team work was found three miles in extent!* A water-fall is in the cave, and a lake 37 ft deep in making explorations.

orth in the deep. A party lately passed three days in making experiments

IMPROVEMENTS IN FORGING IRON.

BY JAMES NASMYTH.

[Read before the Mechanical Section, British Association, Edinburgh.]

Before proceeding to describe the nature of the improvements in question, Mr. Nasmyth made some remarks on the value and importance of any improvement which tended to increase the certainty of the production of sound and perfectly solid forgings of wrought-iron, more especially those massive forgings required for such purposes as paddle-shafts for marine engines, crank and plain axles for locomotive engines, anchors, and such like; on the soundness of which both life and property, to a vast amount, may depend. Mr. Nasmyth instanced several cases in which paddle-shafts of marine engines had given way, although, in the first instance, they had all the outward aspect of the most perfect soundness, but which, on fracture, exhibited the existence of original defect, in being little else, internally, than a mass or bundle of loose bars of iron, which had never been in a sound welded union, but had only been held together by the exterior, where alone the welding had been so far perfect.

The chief cause of such defects was traced to the action induced on the centre part of the metal of such shafts, by the action of hammering such cylindrical forms between two flat surfaces, as in the case of a forge hammer and anvil of the ordinary construction.

Mr. Nasmyth exhibited a diagram, of which fig. 1 is a copy, in order to illustrate the action induced on the centre portion of a cylindrical forging, when produced under the action of a flat-faced hammer and anvil.

It will be seen at once that the action induced on the centre portion of the metal of a shaft or such like cylindrical form, by the successive blows of a flat-faced hammer and anvil, as A and B, is to cause the work to spread out or extend in the direction of E D, E C (as represented by the double pointed arrow in the figure), and as the flattened out form has to be attempted to be corrected by turning the shaft round and round on the anvil, so that each successive blow may be made to correct the spreading out caused by the previous blow, the result of this action is a fretting or mincing of the centre part of the metal of the shaft, resulting in a separation of the metal throughout the entire centre portion of the shaft, somewhat after the manner indicated in fig. 2, frequently to such an extent as to permit the passage of air or water from end to end of shafts forged in this manner. The effect of this kind of unsoundness is, that it is certain, sooner or later, to work out towards the exterior, and, in all probability, result in a "break down" more or less disastrous in its consequences.

Mr. Nasmyth then proceeded to describe his improved form of anvil face, by the employment of which all such defects as detailed above are avoided. Such has been the perfect success and excellent results which have attended the use of his improved anvil face, that its adoption has become almost universal, and the production of absolutely sound, solid, wrought-iron shafts, of whatever magnitude, rendered equally easy as certain.

A (fig. 3), represents the form of Mr. Nasmyth's improved anvil face, which he terms a V anvil, between the jaws of which the work to be hammered is placed, as indicated by a cylindrical shaft seen in section marked C, C, C. A glance at fig. 3 will, no doubt, render its action evident—viz., that the effect of each blow of the hammer on the work, C, C, C, instead of causing, as in the case of fig. 1, a diverging action on the centre portion of the work, occasions, on the contrary, a converging action, as represented by the three arrows, and, instead of having the centre portion of the metal of the shaft rendered less compact and solid by the action of the blows of the hammer, we have quite the contrary effect produced; besides which, owing to the wedge-like form and action of this V anvil face, the compressing effect of the blow is most importantly enhanced, and the ease and rapidity with which such cylindrical work as shafts and the like can be produced by such means is most remarkable, so much so as to enable the forgerman to hammer out at one heat, by means of this V anvil, as much as would require three heats on the common flat-faced anvil; add to which the vast convenience which the fork-like form of the V anvil yields, in keeping the work at all times right under the centre of the hammer, as it is turned round and round to receive the successive blows, which, in the case of work of the largest class, is a matter of no small trouble. Another advantage consists in the free passage, or exit, which is at all times preserved for the escape of the scales and impurities which fall from the hot iron during the process of hammering, which scales fall down towards the apex of the V at D, and trickle away—thus removing the cause of blemish and roughness which is occasioned by such scales collecting on the face of the flat anvil, and getting beat into the surface of the forging.

It will be seen, on inspecting fig. 3, that one such V anvil face as there represented will accommodate a vast range of diameter of work—namely, all diameters such as will neither absolutely rest on the bottom of the apex, D, or on the corners, F, F.

Mr. Nasmyth has taken every means by the most free communication to promulgate among those interested the advantages of this V anvil, and has been rewarded by seeing its use become almost universal. Mr. Nasmyth stated that an angle of 80° was found by him to be most generally suitable for the inclination of the sides of the V, and also that the edges should be well rounded off, and the surface of the V sides curved in the direction of the axis of the work to the extent of 3/4 of an inch in 12 inches, so as to be "prowd" in the centre, and so facilitate the extension (axis ways) of the work. The great simplicity, as well as the important results which are yielded by the employment of this V anvil face, has, in no small degree, contributed to its almost universal adoption. Its employment renders the production of perfect sound work easy and certain.

Mr. Nasmyth next proceeded to describe the second part of his improvements in forging iron, which consists, as in the first case, of means equally certain and simple in producing sound boiler-plates. Mr. Nasmyth prefaced the description of his improvements on this truly important subject by detailing the nature of the most frequent cause of unsoundness of iron forgings generally, and in boiler-plates in particular—namely: the imperfect expulsion of the molten oxide of iron "scoria," or "cinder," as it is termed, which, in every case of welding, hot iron covers and clings so the surface of the metal; and, if left interposing between the welded surfaces, is certain to occasion a defect greater or less, according to the surface of junction it occupies. The frequency of this interposing scoria as the true cause of unsound forged work, was forcibly alluded to by Mr. Nasmyth, and shown to be the most fertile source and cause of the failure of wrought-iron work, resulting as such too frequently does in the most and disastrous accidents—such as the failure of the links of chains and anchors, and in the costly and often distressing results arising from defective (i. e., blistered) boiler-plates.

In respect to the links of chains, Mr. Nasmyth mentioned as the result of an extensive series of experiments on the strength of chain cables, on which, as member of the "committee on metals," he was employed by the Admiralty, out of every 10 cases of fracture, eight were occasioned by defective welding, as evinced by the appearance of the surfaces, which present to a practical eye appearances not to be mistaken, owing to the very peculiar aspect of the surfaces of the apparently welded metal, between which surfaces the oxide, or scoria, had not been duly expressed.

Mr. Nasmyth further described the condition absolutely requisite to perfect welding—namely: not merely that the surfaces we desire to weld should be really "welding hot," but also that, when brought into contact, no particle of the scoria, which inevitably clings to the metal while welding hot, should be permitted to remain interposing between such surfaces. If such material is left interposing, we are certain to have defect and unsoundness, to a greater or less extent, as the result.

In order the more clearly to detail his improvements on this important subject, Mr. Nasmyth exhibited a coloured drawing, representing the usual form and arrangement of a "pile" of "slabs," such as are employed when welded together, to form a mass of iron, from which boiler-plates, or bars of iron, are rolled. Fig. 4 represents such a "pile" of "slabs" which, having been, as is generally the case, produced under the action of a forge hammer and anvil, having flat or, as is generally the

case, slightly convex surfaces, causes the slabs so produced to have certain hollow parts, or slightly concave portions of their surfaces, so that, when piled one upon the other, as in fig. 4, the risk of having hollow spaces is almost certain. The hollow spaces are represented in the figure by the dark irregular lines between the slabs.

Referring to fig. 4, A, B, C, D, represent a pile of four slabs, laid on the anvil welding hot. Owing to the concave irregularities of the surfaces, the parts most certain to come into contact first are generally the exterior edges of the slabs. The effect of the blows of the hammer is first to weld the parts in natural contact, and by continuance of the blows the interposing scoria, or cinder, is expressed in a degree more or less perfectly, according to the energy of the blows, and the deepness of the convex, or hollow patches, betwixt the slabs. So long as there exists an exit, or passage, for the scoria all is well; but, as generally happens, some portion of this scoria lurks behind, after all chance of escape is removed by the welding of the exterior portions of the surfaces of the slabs. The result of this is that we have, to a certainty, a defect, greater or less in amount, according to the quantity, or surface, over which the enclosed scoria extends. Once such scoria is shut up between the surfaces of the slabs no amount of after hammering will ever expel it, but, on the contrary, will only tend to its extension over a larger surface; and, as before said, so long as a particle of this scoria is left interposing, so have we a degree of unsoundness in proportion.

Great as this evil is, and common as it is as a fertile cause of defective iron-work, and the more especially so in the case of boiler plates, the means of avoiding such source and cause of defect is as simple as the results are important; and it is to be hoped that the free and open communication which Mr. Nasmyth has made of his views on this subject will be answered in the most acceptable way by the general adoption of his improvement, as certain means of avoiding the occurrence and existence of all such causes of defective boiler plates and forge work generally, which improvements consist simply in so forming the surfaces which we desire to weld together that a free exit may be preserved to the last for the escape of the molten oxide, or scoria, until the entire surfaces of the parts we desire to weld are thoroughly incorporated by the welding property, under the action of the hammer, or rolls, as the case may be.

In order to accomplish this most important and desirable object, Mr. Nasmyth forms the surfaces of his slabs convex (see fig. 5), by which most simple means a most perfect free exit to the scoria or interposing impurity is maintained to the last moment, the welding commencing at the centre part of the contact, W, and extending outwards towards the edges under the action of the successive blows of the hammer, or squeeze of the rolls; but, as before said, an open door is kept for the escape of the scoria, until the surfaces unite from the centre, W, to the outside edge, Z, Z, Z, Z. Here, then, by an arrangement, or formation, of the surfaces we desire to weld we have the most certain and simple means of procuring a perfectly solid sound mass of iron, which, when beaten, hammered, or rolled down to whatever thickness we desire, will retain to the last all the qualities of the one sound solid mass we had converted it into by this most simple improvement—viz., giving to the surfaces we desire to weld a convex form, and relation to each other.

Mr. Nasmyth concluded his observations on these important subjects by an earnest appeal to the members of the mechanical section to diffuse, by all means in their power, the information which, on this as on all such subjects, he will ever feel the highest pleasure in communicating to the practical men of his profession, who may think fit to accept these results of an active life, which he finds so much real pleasure in freely sharing with them.

ON SOME OF THE USES OF PYROGEN IN NATURE.—No. IV.
BY JOHN JOSEPH LAKE.

The disturbance of the electric state of the earth, and origin of terrestrial magnetism, is to be attributed to many causes. The sun affects it, as is rendered evident by the influence of that body in producing the daily variation of the needle. The unequal heating of the surface of the earth also assists in producing the disturbance, as is proved by Lubeck's discovery, that the application of heat to the point of junction of two different metals (as bismuth and antimony, and bismuth and copper) creates a current. Christie's experiment, with a disc of bismuth surrounded by a ring of copper, shows the same thing; for heat being applied to the edge of the copper an extraordinary amount of magnetism is developed, two poles (north and south) being produced at certain points on one surface, and poles of an opposite character (separated from them by the thickness of the bismuth only) on the opposite surface. Professor Christie endeavoured to extend this experiment to the case of a spherical copper shell filled with bismuth and heated generally at the equator, but more particularly at one point, and the results appeared, to a certain extent, to correspond with the state of terrestrial magnetism. But there was a degree of uncertainty in the results, owing, probably, in part to the difficulty of insuring a good union between the copper and bismuth. In these experiments the source of heat is from without, but the heat of the earth is rather to be looked for from within, for the amount of heat in the sun's rays is very uncertain, and, probably, very small. The heat that they produce is rather to be viewed as an action resulting from contact, than any essential property of heat that they possess.

The experiment of a metal ball revolving with its axis at an angle with the magnetic dip affords a key to the real source of terrestrial magnetism, for the earth must revolve at angles with the solar magnetic dip, because the plane of the axis of the earth forms an angle with that of the sun. Therefore, if the magnetic axis of the sun coincides with its axis of revolution, the axis of the earth is always at an angle with it, and if the solar magnetic axis does not coincide with the axis of revolution, the axis of the earth and the solar magnetic axis can never be in the same relative position two seconds together. This, therefore, becomes a permanent source of electrical disturbance in the earth.

The sun, in like manner, may owe the electrical disturbances that produce its electro-magnetic condition to other systems, or partly to the action of its own planets. Its axis of revolution forming an angle with the Milky Way would be quite sufficient for the purpose. There seems, in fact, to be strong reason to believe in the existence of such an influence as this; for when the earth is in that part of its orbit that is nearest to the widest and densest part of the Milky Way, the variation of the magnetic needle is seriously affected. During the three months between the vernal equinox and summer solstice, it retrogrades towards the east, and during the other nine months of the year its general motion is towards the west. In October it has nearly the same position as in May, and then for four or five months the western motion is smaller than during the three preceding months—that is, during the three months the earth is passing from Libra to Capricornus, the variation changes as rapidly as during the remaining nine months of the year, and whilst it is passing from Aries to Leo the change is least. This is what we might expect from the influence of the Milky Way. At its densest part it sends back the needle, but at the opposite side its power is not sufficient to cause the needle to retrograde, yet it has sufficient energy to check the variation. This variation of the needle seems to afford a clear proof of the electro-magnetic state of the Milky Way. It is, indeed, only by some extraneous influence of this kind that the phenomena of the annual variation can be explained, for no reason can be assigned why the sun should act for three months in one way, and nine months in another. Were the sun alone the cause of this variation the effects would be more regular, and the return of the magnetic needle to the same position might be expected to occur at regular intervals.

It is also of importance to note that the daily variation is seriously affected whilst the earth is passing onward through Libra, Capricornus, and following signs—that is, during the spring, the variation being generally greater at that time than during the rest of the year.

Ordnance-office, Portsmouth, Oct. 15.

THE COPYRIGHT OF DESIGNS AMENDMENT ACT.—On the 14th August an Act was passed (18th and 19th of Victoria, cap. 104) to extend and amend the Acts relating to the Copyright of Designs. By this Act designs may be provisionally registered for a year, which will secure the benefit of the design to the proprietor, and, although exhibited, will not defeat the copyright. Sculpture, models, &c., may be registered. The Board of Trade may make regulations for the registration of designs.

Original Correspondence.

FOURDRINIER'S PATENT SAFETY APPARATUS.

SIR,—Looking over the Journal last week, I saw an account of how an accident had been prevented at Belmont Colliery by the use of "Fourdrinier's apparatus;" the writer was in error in supposing that it was the first instance in which an accident had thus been prevented. I enclose you a memorandum which Mr. Higgin, my agent, handed to me yesterday, on naming the subject to him. BENJAMIN HUNTSMAN.

Tinsley Park Colliery, near Sheffield, Oct. 16.

BREAKAGE OF ROPE.—On the 10th of August last, as the carriage and empty corvee, weight about 7 cwt., suspended at the end of the rope, was descending No. 1 pit, depth 120 yards, the rope broke when the carriage was about half-way down the pit, and which would have fallen to the bottom, and done a deal of damage, had it not been for the safety apparatus, which caught and held the weight until another rope was let down to raise it to the top.

FOURDRINIER'S PATENT SAFETY APPARATUS.

SIR,—Observing in last week's Journal the letter of your correspondent, "P. R.," on the subject of the adoption of my "safety apparatus," I think it a duty on my part, and an act of justice to the proprietors of the Killingworth Colliery, to inform him that those gentlemen gave me their orders some weeks since to fit my apparatus to their cages, and which are now in a forward state. I have every reason to believe that my invention is becoming duly appreciated, as I am daily receiving orders from this and other influential districts.—E. N. FOURDRINIER: Sunderland, Oct. 16.

BIRAM'S MINERS' LAMP.

SIR,—I am at all times glad to hear of an attempt to lessen the danger to which the miner is daily exposed, and as that of Mr. Biram has produced a lamp, at first sight an improvement on the original Davy, but in reality anything but an improvement as to the safety of the workmen, I trust a few words on its merits or demerits may not be deemed out of course.

Before pointing out defects, let me observe that I do so in a good spirit, and not with a view to throw cold water upon the humane endeavours of any, and more particularly those of Mr. Biram, to whom as a miner I feel deeply indebted for his consideration; and I trust anything that falls from me may not deter him from continuing to give the subject his attention, so that better results may obtain than has yet appeared.

The reflector is calculated to overheat and render dangerous the wire gauze in case of an internal explosion, the low temperature of and between the wires constituting the principal safety of any wire gauze lamp. The interior of the lamp is of such dimensions as to admit of a large accumulation of gas inside, increasing thereby the liability of the flame to pass through the meshes of and to force out the gauze in front of the lamp. The bottom fits into its place, and is secured admirably; but while this door is closely shut and locked, the other (the top gauze), through which a reckless workman has as ready access to the naked flame as he could wish for, is not bolted.

Mr. Biram will, perhaps, consider a second time whether his lamp is a safety lamp, or whether it is an improvement on the old Davy; and I will venture to say, if he does not agree with me, that it is neither one or the other, that he will not deem me an intruder, when I assure him I have the same object in view as he apparently has had—namely, to be of service in the humane act of saving life.—A DURHAM PITMAN: Oct. 10.

ON THE INSPECTION OF MINES.

SIR,—I have read in your Journal a copy of the remarks of the *North British Daily Mail*, on the recent prosecution of the managers concerned in the explosion of fire-damp in one of the Airdrie collieries; and as prosecutions of this kind are now becoming so very common in Scotland, perhaps you could inform your readers on the steps which are usually taken by the Procurator Fiscals in obtaining their information of the particulars of the accidents on which such prosecutions are based.

If it is true that the police force are the principal, if not only, medium through which their information flows, then it is somewhat strange that a power so inquisitorial should be intrusted to men possessing neither any practical knowledge of mines, or of the dangers attendant upon them. For, however judiciously the power invested in the fiscals may be wielded by them, it is of too arbitrary a description to be popular, and as the fiscals' fees depend upon his cases, it would be more in unison with the general tenor of our laws, if such prosecutions depended more on the report of a competent and disinterested practical mining engineer, who could better distinguish an act of culpable negligence from a mining casualty, than one who is only noted for his legal acquirements.

Under the present system, if an accident happens, no matter of how unavoidable a description it may be, there is no certainty that the manager will not be committed and tried as a felon; and it is a poor recompense to him, after being withdrawn from his friends, and suffering great anxiety of mind, and probably ruined with the costs of his defence, to be told that, after a careful inquiry into the matter, he is honourably discharged. Such cases are too common, and if the recent Mine Inspection Act throws a salutary control over the future, it will confer a boon on the managers of works in Scotland.—SOUTH WALES: Oct. 15.

PYROGEN AND ELECTRICAL CONDITION.

SIR,—Granting to Mr. Lake the interpretation which he attaches to "pyrogen," and that at the time of its introduction it was a better term than electricity, recent discoveries, I think, render it altogether inappropriate, and unless a term can be found that shall compass all the properties of that all-pervading fluid in Nature, the most unmeaning is, perhaps, the best.

Electricity is now the acknowledged cause of gravitation, to which a "begetter of fire" can have no reference; it is also the bond in matter which fire destroys, and matter being drawn to the centre of the earth, which is negatively electric, or repelled from the highly electric upper regions, with a force equal to the electrical condition of the body, by contraction, or compression, matter actually increases in weight—weight being nothing more than the indication of the force with which two bodies, in similar or dissimilar electrical conditions, repel, or attract, each other; or with which fire can have no connection.

Mr. Hopkins, in his elaborate work on *Terrestrial Magnetism*, of 1844, very properly observes that heat is not the cause but the effect of chemical action—a tremendous inroad on the fallacies of chemical science, the truth of which subsequent discoveries have fully confirmed; and although we are not yet in a condition to be able clearly to demonstrate how electricity acts in producing the various phenomena of this extensive branch of natural philosophy, still quite sufficient has been done to place beyond doubt that chemical action is referable solely to electricity, but to which "pyrogen" can have no reference; more especially in the operation of crystallisation; much less will it convey to the mind an idea of the action on each other of two or more bodies, such as salt and ice, which causes their mutual decrystallisation, or "thaw," although in a menstrum, the temperature of which is from 20° to 40° below 0, as in freezing mixtures.

To Mr. Lake, as I have already observed, science is indebted for the interesting facts he has elicited in connection with electricity; but what he means by stating that he is the first, and, as far as he is aware, the only person that ever produced experimental proof of the existence of pyrogen, I am utterly at a loss to understand. Does he mean to say that when Franklin brought down electricity from the clouds—charged with it a jar, and showed that it was identically the same fluid that was produced with a machine, he did not afford experimental proof of the existence of electricity? Franklin considered "positive" and "negative" to be merely plus and minus; and he found that, if he connected two insulated bodies with the wires of a machine, he could transfer the electricity of the one to the other, and that on approaching the two bodies to each other the balance was restored. But electricity has been identified with heat instead of with cold; and the scientific world has been too successful in undoing all that Franklin had so wisely done, and, therefore, have imposed on Mr. Lake and others the task of putting things back as they were. I may, perhaps, mention that, when at Broomfield, in 1847, I was informed by Mr. Crosse that, by placing a piece of glass between the points of his powerful machine, he had succeeded in piercing a hole in it, but when the experiment was made I cannot say.

Whether the credit of suggesting that the atmosphere of a body is in a different electrical state to that of the body itself be due to Mr. Lake or myself, is a question that must be left to the decision of others, although, probably, it is one respecting which the present generation will not much concern itself; but, in reference to what Mr. Lake states respecting Mr. Sturgeon's experiments with electric kites, I deem it due to my late much esteemed friend, Mr. Weekes, to annex the following extract from one of

his letters, affording evidence of his claim to the discovery which Professor Faraday, in his injudicious lecture, assigned to Pelletier and Quelet; it is dated 15th Feb., 1850.—"Crosse had his exploring wires carried out at least 30 years ago. Mine have been in existence 10 years, but they differ entirely in their mode of insulation, and in their terminal arrangements, &c., from the Broomfield apparatus. My electric kite experiments were made upwards of 20 years since, and have been almost yearly repeated. They were made public, almost as soon as I became convinced, through several scientific institutions to which I was then lecturing, in some of the periodicals of that day, and were freely communicated to my scientific friends in my letters. I have lately seen that my old friend, Mr. Sturgeon, of Manchester, has arrived at similar conclusions by the same means. I believe he did not know what had been done by me. He would be too honest not to mention it if he had known." FRANKLIN COXWORTHY, Canterbury-place, Lambeth-road, Oct. 12. Author of *Electrical Condition*.

PYROGEN.

SIR,—In reply to Mr. Dumaresq's inquiries in your Journal of the 12th inst., I beg to state that the subject of terrestrial magnetism has long engaged the attention of the scientific world; but, up to the period of the scientific travels of Humboldt, the facts with which we were acquainted had not been reduced to a science.

M. Biot was the first who undertook the difficult task of reducing the existing collection of observations to some principle of calculation. In the meantime, a similar task had been undertaken by M. Kraft, of St. Petersburg, but on different principles. The latter philosopher, in attempting to connect the different observations on the dip with each other, discovered this very simple relation—viz.: "that the tangent of the dip of the earth, in any place, is equal to double the tangent of the magnetic latitude of that place."

These philosophers also arrived at the following conclusions from their investigations of the subject:—1. That the laws of terrestrial magnetism are inconsistent with those which belong to a permanent magnetic body. —2. That they are perfectly coincident with those which appertain to a body in a transient state of magnetic induction. Up to this time there was only one way known of inducing magnetism—namely, by applying a magnet to impure iron, nickel, &c. M. Oersted's discovery, however, showed that any substance, capable of conducting an electric current, might be rendered temporarily magnetic. This discovery led to Prof. Barlow's experiments with an artificial globe, and Dr. Faraday's subsequent investigation of the subject, when the latter arrived at the following conclusion, amongst others:—"Upon the supposition that the rotation of the earth tending by magneto-electric induction to cause currents in its own mass, these would, according to the law (referring to a law previously illustrated) and the experiment, be upon the surface, at least from the parts in the neighbourhood of, or towards, the plane of the equator, in opposite directions to the poles."—(*Baherian Lecture, Philosophical Transactions*, 1832, p. 163, par. 182.)

Mr. Evan Hopkins, however, assumes that the electric currents pass into the earth at the north pole, and out at the south; and in this his theory differs with mine, and the results of Profs. Barlow and Faraday's experiments. It is, indeed, hard to conceive how a state of things, as represented in the plates of Mr. Hopkins's work, could exist; and as he gives no explanation, but merely an idea in a figure, I refrain from saying more on the subject; for I would not disparage his excellent work, which appears to have been chiefly designed for mining purposes, and for such is very good.

The difference between pyrogen and electro-magnetism is the same as between any other cause and effect. Electro-magnetism is a temporary magnetism, produced in bodies by causing currents of pyrogen to circulate about them.—J. J. LAKE: *Ordinance-office, Portsmouth*, Oct. 15.

LUNAR GEOLOGY.

SIR,—I confess it has always appeared to me a singular method of investigating the structure of our own globe, by making reference to mountains in the moon. It reminds me of that ironical allusion of the great Lord Bacon to the speculations of certain learned men, which he tells us "are like the stars which give but little light because they are so high;" and, certainly, when we have the surface of the earth before all our senses, at the command of every test of science, and not the surface only open, but perforations of the interior, it does appear a most refined and exalted method of investigation to turn our back upon this dwelling place, and seek a knowledge of our home by telescopic data, gleaned from the distant habitations of our neighbours. Is it not like taking a voyage to China to get some insight to the meaning of parliamentary debates? The alleged volcanoes of the moon have long been subjects of speculation, but it surely is a hazardous affair to reason upon them. We are told the moon possesses neither air nor water—two considerable differences, which must rather impair the completeness of any analogies we can draw through a telescope. In the late speculations by Mr. Nasmyth, abstracted in your pages, we have a specimen of what may be called the double hypothesis, in which assumed theories respecting this earth are brought to explain alleged lunar facts, and then these compound lunar theories so constructed are, by the fair exchange of doubtless a free trade, again imported hither to explain alleged terrestrial facts. The fundamental proposition of Mr. Nasmyth's selenology is the old theory of the igneous origin of the granitic or crystalline crust of the earth. I do not exactly understand why this formation has been pre-eminently distinguished over all other rocks as the crystalline; as all other rocks (say, even coals) are equally divided by their planes and cleavage into a sort of crystalline masses, which masses also comprise some crystals within them, we might by a certain well-known logic maintain the identity of both kinds "because there are crystals in both;" but, in sober earnest, I cannot discover, either in the stratification or in the texture of granitic rocks, any differences from those rocks which are especially designated "sedimentary," which can bring before the mind the slightest traces of that igneous origin, of which every ironmaker at least may study some of the symptoms and effects in his own slag. Mr. Nasmyth's geology is founded upon two assumptions directly the reverse of each other—in fact, mutual negatives. The first is the compression of the fluid interior, by a cooling crust, so as to force out the confined ingesta; the second is the exhaustion or contraction of that fluid interior, so that the hollow crust may fall in, for the purpose of creating valleys and boulders. Assuming for a moment that such compression could exist (which is, in fact, out of the question), what is the other power that is to force out the liquid interior to produce these vacuities, after the hypothetical compression has ceased? By what energy are tens of hundreds of millions of tons of liquid matter to be exhausted from beneath the crust for the convenient purpose of allowing it to fall in with a splash, to create hundreds of square miles of valleys, or low lands, or submarine continents; and what has become of these enormous torrents of matter so ejected? The spoils of known volcanoes, either extinct or active on this earth, summed altogether, bear no more proportion to such extensive energies than the oil spouted out of one pore of an orange peel does to the matter of the whole skin. As to the cooling crust on the surface of a melted globe, whether that be the earth or the moon, having any power to act with a force capable of producing the assumed compression and volcanoes, I cannot understand it in any other light than as a pure effort of the unmixed science of imagination. What instance from terrestrial physics can be brought forward to support it? Does the bursting of an arch by the pressure of passing water encourage the belief in the ability of a circle of 20,000 miles of congealing matter to compress the fluid upon which it is floating? Suppose the crust to be 100 miles in thickness, about 1-60th part of the whole diameter: this may be taken to represent a water culvert 10 feet diameter, having to support the whole pressure of its contents a brick circle of 2 inches thick! Or, taking the ordinary assumption of about 30 miles of crust, this brick arch must be reduced to a thickness of 6-10ths of an inch, surely a very powerful agent of compression! Besides, as the cooling and consequent compression must be gradual, why is the enclosed fluid to wait obligingly until the crust is thick enough for the theory, and make no exit until the volcano is properly got up? Further, the law of fluids passing into the crystalline state is expansion, and not contraction. Icebergs do not compress the water by an increase of weight, but float in it and upon it. The coat of ice covering a pond does not compress it and raise aqueous volcanoes over its surface. If the crust cracked in the subsequent cooling after it had become solid, the melted fluid below would rise to its level in those cracks, abolishing the volcanic necessity; but assuming solidification possible, even this kind of cooling contraction could hardly take place over the supposed temperature of the interior. The truth is, such theories are based on a most partial and incomplete estimate of relations, which are not positive, but have only a comparative value. A mountain of granite is certainly in one sense a very ponderous affair, if the imagination attacks it without proper assistance; but, when adequately considered, all the granitic mountains in the world, when floating upon the assumed sea of glass

would have no more power in compressing it than walnut shells floating in a tub of water exercise upon the hoops which confine the vessel; and, if the heat producing fusion proceeded from within, in some way which it is quite impossible to account for, how could any cooling or contraction of the surface be effected against this emittant agent of dissolution. The only kind of fusion which appears to be at all admissible, is such as I have referred to in the case of aerolites, arising from the sudden passage of undecomposed substances into an oxidizing medium; but whether this ever did take place or not on our globe, I can trace no general evidence of it on the surface—its testimony must exist far beneath out of the reach of aqueous action. If such splashing catastrophes as Mr. Nasmyth supposes had been employed to prepare the earth (according to the phrase) for man's habitation, the great geological feature of the globe must have been not granite, but pumice stone. Why is the granite of a uniform texture? why is it not translucent in peaks and promontories, and opaque and stony in quarries and mines? One day's study at some of the iron-works near Edinburgh, with a bucket of water for his companion, might give a philosopher juster notions on this subject than a hundred lunar years of telescopic examination. Does not Mr. Nasmyth's own assumption of the lunar matter being lighter than cork make a sad invasion on the integrity of his analogies; and as to the comparison of our earth's surface to the skin of a wrinkled apple, what has become of the juice of the earth which so plumped it up heretofore? In fact, I repudiate the notion of accidents and confusion having been the agents in forming the earth's surface. Mr. Hopkins, on the contrary, attributes everything to the constant government of magnetic energy. And who can see the planes of stratified or "crystalline" rocks laid bare before him, and trace their rising lines, without recognising the strength of a vital energy which has commanded them into their positions. There is nothing which appeals to the mind with a more forcible impression of a lively and meaning movement than the onward stretch of rocks in their rising planes. We may be as yet at an immeasurable distance from realising any intelligible notions of the first great acts of creation, but we must be convinced that here, as everywhere else, nature is presided over by laws and order; and in struggling to obtain some insight into them, we shall at least, in the meanwhile, do something to rescue this globe on which "we live and move and have our being," from an antiquarian philosophy, which consigns it to the anomalous category of being an inert relic, the sport of accident, and hypothetical convulsion.—DAVID MUSHET: *October 10.*

ERRATA.—In letter "On Ventilation—Mine Inspection," &c. Sept. 20, second paragraph, 15th line from the end, for "to its own level," read "to its own levity;" next paragraph, sixth line, for "larger," read "longer."

FORM OF THE BLAST-FURNACE.

SIR,—I was pleased with your extract from Mr. H. Fairbairn's paper, in an American journal, on this subject. He is undoubtedly right as to the superior effects of a curved section; but its full efficacy depends on the position of the various chords upon which the curve is constructed. If the top of the bosh is the widest part of the furnace, and the chord of the curve be drawn from there to the edge of the filling place, that is decidedly a defective shape; and it is by no means new. Furnaces, limekilns, &c., have long been curved in that manner. The carrying up the walls as a mere cylinder from the boshes for a considerable height, which he censures, is also defective. I have seen many furnaces so built in different parts of this country, with the intention of carrying out Mr. John Gibbons's principles. It is an approximation which saves some trouble in building; but it does not provide for a further expansion of the blast at a highly heated point amongst a large mass of materials, which by the very mass accumulates heat, and copiously provides for deoxidation. From the top of the boshes the walls should continue to expand, until they reach at least half the height of the whole furnace. If the width at the boshes be 12 ft., and the diameter is further expanded to 15 ft., at 8 ft. above the boshes, and the contraction commences there, the area of the most valuable region for deoxidation will be increased more than a third, giving nearly 600 cubic feet more of materials to be acted upon, with the additional power of an accumulated mass. All this is more than lost, if the curve commences at the top of the boshes; for the disposal of the blast upwards is quite as important a consideration as the pressure of the material downwards. I do not gather from the extract whether Mr. Fairbairn proposes this point as the commencement of his curve; but, if so, the mere cylinder is preferable, at least for ordinary materials. Anthracite may, and does, require particular arrangements; but mass must be quite as important an element of economy in an incombustible as a combustible fuel. The proportion he gives for the filling orifice—namely, one-third of the extreme diameter—may suit anthracite, but is too small for ordinary fuel. Indeed, I doubt if there is any limit to the advantageous width of the top of the furnace, except the convenience of filling, provided the fuel is of a kind favourable to the propagation of heat. We are much in the dark as to the cause of this variation in calorific effect; but it appears to be connected with the more or less porous, or spongy texture, of the coke. Anthracite is, in fact, a coke without pores.

That furnaces which will bear an increase of width at the top receive thereby a great accession to the quantity of their make, is a fact first established by accident, and now generally known. The interior of a blast-furnace, when in operation, contains a gaseous medium, at a density considerably above the atmosphere. The blast which enters is at once greatly expanded in bulk; it is further increased in volume on its conversion to carbonic oxide; add to which, in the upper regions there is a considerable evolution of carbonic acid gas from the limestone, so that the pressure of the gaseous contents is many times greater than that due to the blast itself, if blown without charge through the materials. The lower the pressure of this medium, the less is the resistance offered to the entry of the blast. This gives several advantages. There is less loss by repulsion at the tuyères—a considerable quantity, which never has been correctly estimated. The blast which enters is more rapidly passed through the fuel, and, therefore, more quickly oxidised; it passes off faster into the next region of carbonic oxide, permitting the incoming volumes of air to be more freely decomposed, and the whole heated gas passes more rapidly up through the materials; and which, as the gas communicates heat by contact, and not by combustion, must be raised in their temperature in proportion to the rapidity of the passage.

As this beneficial diminution of pressure within must be exactly in proportion to the capacity of discharge from the width of the filling orifice, it is to this succession of actions that I attribute the known fact, that furnaces with wide tops make most iron. But with a fuel like anthracite, which performs its chemical combinations more slowly, a contraction of top may be beneficial, in order to effect a slower transit, and give time for the necessary unions. I do not understand whether Mr. Fairbairn proposes to apply the same form of curve to the lower part of the furnace which comprises the boshes; if so, it would be erroneous, as in this place such curve would retreat from the direct line of the blast, and so far withdraw materials from its action. If any curve is employed here, it should be with the convex towards the interior, but not a segment of a circle. It should rather be parabolic, so as to be nearly straight on the boshes, and the curvature increasing, until it rounded off the angle at the top of the hearth; but this is a nicety hardly worth attending to. If the boshes are built straight with the right slope, the blast will soon effect the other modification. In fact, as long as Mr. John Gibbons's treatise is in print, there is no ground for the complaint of proper information being wanted on this subject. His section is complete in principle, though he has since found it practicable to carry his views out further, as he desired, by a much greater diameter of hearth.

It is striking to see an attempt at correct notions proceeding from foreign sources, whilst vague views are still prevailing in this iron-making country. Some of your correspondents, for instance, have proposed to reduce the blast-furnace to a height of 20 feet, to economise heat and fuel, and cure the red-short and cold-short in its produce. There are two kinds of economy—the one is reducing expenditure, the other applying it to advantage. As the quantity of iron made depends upon the amount of expenditure, under proper conditions, of blast and fuel; it is evident a reduction of these will only reduce produce, which will be no economy. A certain quantity of fuel must be consumed at the tuyères, in order to bring down and melt a certain quantity of materials. In doing this a certain amount of heat is necessarily generated; the only kind of economy, therefore, that is available, is the due application of this heat after its production. The present blast-furnace applies the surplus successively to all the stages of cementation, deoxidation, and the expulsion of volatile matter, and the height is carried up until no more heat remains so available. But by shortening the blast-furnace to 20 ft., at which region the materials are at a white heat, and building a vault over them, that temperature which is now made useful in preparing 25 feet of materials above, would be merely expended in the rapid destruction of the dome. The high tem-

perature into which the materials would be filled, would fuse them without any proper preparation, the sulphurets especially would be liquified at once, without the slightest chance of volatilisation, or neutralising combination; and in what way this would promote the removal of either red-short or cold-short from the produce is quite as difficult to appreciate as any other part of the proposal. It is always to be regretted when ill-considered changes are advanced as beneficial, because the course of genuine improvement is checked, and discredited by plans which are opposed to principle and experience, and attack their intrinsic merits with the name of error.—DAVID MUSHET: *Oct. 11.*

IRON TRADE—IRON ORE.

SIR,—I have been much interested by the articles on "iron ore" (hematite) contributed to your valuable Journal by Braithwaite Poole, Esq., and David Mushet, Esq., and others. Perhaps the latter gentleman, or some other of your correspondents, experienced in mining and practical geology, will oblige me and your numerous readers with a geological description of this valuable mineral (hematite), accompanied with such remarks as may lead to its further discovery, particularly the geological character of the district, and the surface indications where it may be found. The very limited and few districts known to produce hematite suggests this inquiry.—B. W.: *Whitehaven*, Oct. 16.

THE EXPLOSION OF STEAM-COAL AT CARDIFF.

SIR,—In your valuable paper of the 21st Sept., I read with much concern the account of a serious accident at Cardiff by the explosion of a cargo of steam-coals on board the *Gertrude*, Capt. Newman, bound to Liverpool, together with your correspondent's remarks from Cardiff. I fully agree with your correspondent that too much caution cannot be taken in adopting the necessary means of preventing such fearful consequences; but it would be very desirable to know from what descriptions of coal are most to be apprehended such a fearful result. NAUTICUS. *Cardiff*, October 10.

THE EMERY OF ASIA-MINOR, AND THE MINERALS ASSOCIATED WITH IT—GEOLOGICALLY.

BY M. J. L. SMITH.

Among the various mineral substances employed in the arts, emery is, perhaps, the one whose geological character has been least examined, and respecting which there is most yet to be learned; yet, in both a practical and scientific point of view, the enquiry into the geology of this substance is full of interest. The existence of emery in Asia-Minor was not known up to the year 1846. At the commencement of the following year, I discovered this mineral *in situ* for the first time in Asia-Minor; but since that period, I have discovered it in several localities in the same country. The principal situations in which emery is found in Asia, are—Gumuch-dagh and Kulah. The first of these is a mountain, near the interesting ruins found by the French traveller Poujoulat to be those of the ancient Magnesia. The second, Kulah, is in that part of Asia-Minor called Cataceumney, or the country of fire. The geological formation of these places consist essentially of metamorphosed limestone, overlying micaceous schist, gneiss, &c. The marble of Kulah has undergone a complete metamorphosis at its surface by the action of the lava which, in former ages, flowed from the numerous volcanic craters which give to this region its peculiar aspect. The other new localities in which emery is found, are Adula and Manser in Asia-Minor, and the Isles of Samos and Nicoria. The emery is embedded either in the soil which covers the limestone, or in the rock itself. It is found in masses, some of which are no larger than a pea, while others contain some thousands of kilogrammes. The fragments of emery are generally angular, but they are also sometimes rounded, although they do not seem to have taken the latter shape by attrition. The masses which are formed in the soil above the limestone do not offer much interest to the geologist, as it is evident that they are merely brought into that situation in consequence of the disintegration of the rock in which they were originally embedded, or that they have been transported from some other locality; it is, however, difficult to admit the validity of the latter supposition, after what may be seen at Gumuch-dagh, for there it is only at the summit and not on the sides of the mountain that the emery is found. After some investigations into the nature of emery, and the rocks associated with it, I have come to the conclusion, that this substance has been formed and solidified in the limestone in which we at present find it; and that it has not been detached from more ancient rocks (such as granite, gneiss, &c.), and then deposited in the limestone at the epoch of the formation of the latter. My reasons for thinking thus are as follows:—The most careful researches in the older rocks in the neighbourhood (in those which lie beneath the limestone) have failed in discovering the smallest portion of emery; besides, the blocks of emery which are found in the limestone rock never contain any foreign deposit. Although we find mica schist in the limestone at Kulah, it is never in contact with the emery, and never contains the least quantity of corindon. I consider this important to my view; for, in the specimens which I have obtained, the calcareous deposit which contains the emery exists in two different states—one being the original limestone rock, the other a concretion, formed by the influx of calcareous waters.

The limestone in contact with the masses of emery differs generally, both in composition and colour, from the surrounding rock. At Kulah, for example, where the marble, which constitutes the limestone formation, is extremely pure, the part touching the emery is of a dark yellowish colour, having the appearance of certain ores of iron, and containing a large quantity of alumina and iron. The thickness of this coating to the emery varies; but it is demonstrable that it passes gradually into the surrounding white marble, with the pure crystals of which it becomes imperceptibly mixed. If the masses of emery had been separated from some more ancient rock, and afterwards imbedded in the marble, there can be no reason why the point of contact should not be definite and abrupt, without the gradual blending which I have mentioned. What we observe in this case is precisely the same as that which occurs where ferruginous and aluminous minerals are formed, and afterwards separate from limestone not yet completely solidified. There are other reasons for supposing that emery is formed in the limestone rock by a process of separation. I have a specimen which shows this in a remarkable manner; it is a nodule, in which the nucleus is surrounded by two distinct concentric layers: the nucleus consists of emery, the next layer of chloritoid, and the exterior of emeralite—the last being in contact with the rock. The constituents of this specimen have the following composition:—

Emery.—Mixture of corindon (alumina slightly hydrated) and oxide of iron. Chloritoid.—Silica 24, alumina 40, oxide of iron 28, water 7. Emeraldite.—Silica 30, alumina 50, lime 13, water 6.

In proceeding from the external surface to the centre, the greater part of the silica will be found combined with a large proportion of alumina and some lime, forming a particular kind of mineral; next, the remainder of the silica combines with a further portion of alumina, and a considerable quantity of oxide of iron to form the chloritoid; and lastly, the alumina and oxide of iron, which remain, crystallise separately, the homogeneous attraction of their particles being greater than their chemical affinity for each other. Effects of this kind are not rare, and they are always worthy of remark. In concluding the considerations relating to the geological character of emery, with respect to Asia-Minor and the neighbouring islands, I cannot help expressing a belief that future investigations into this subject will show that emery constitutes a geognostic character and peculiarity for certain limestone deposits in this part of the world, in the same manner as the nodules of flint do for the chalk of Europe. With regard to the mineralogical character of emery, I think it ought to be considered rather as a rock than as a mineral, and that it consists of a mixture of corindon and minerals of oxide of iron, more or less associated with other mineral substances of a similar class.—*Comptes Rendus*.

LIABILITY OF RAILWAY COMPANIES.—The jury, in an action just tried at Romford, have returned a verdict of £11, against the Eastern Counties Company for injury sustained by Mr. Henderson, a solicitor, while entering a train, in consequence of there being no lights at the Forest-gate station—a deficiency which has since been supplied.

BRITANNIA BRIDGE.—The Government inspector is to go over the second great tube on the 19th.

RHEUMATISM—A WONDERFUL CURE OF WHICH DISEASE HAS BEEN REPORTED BY HOLLOWAY'S OINTMENT AND PILLS.—Mr. Donald McKellar, of Murrumbidge, New South Wales, states—"That a man of about 50 years of age, employed by J. Peter, Esq., justice of the peace in this colony, suffered for 12 months from an attack of rheumatism, brought on by exposure to wet and cold. He was so painfully afflicted that his body was bent nearly double; in this deplorable condition he commenced using Holloway's ointment and pills, and so speedily was the cure effected by them, that it seemed to those who had witnessed his sufferings little less than a miracle."—Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.

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Mr. R. TREDINICK begs to inform his Friends and the Public of his REMOVAL to the above COMMODIOUS ROOMS, in the Hall of Commerce, where he purposes to hold, in addition to his general Agency Business, PERIODICAL SALES, BY AUCTION, OF SHARES IN MINES, RAILWAYS, BANKS, CANALS, INSURANCE, AND OTHER COMPANIES; also Reversions, Annuities, Bonds, &c., together with Estates, Houses, and Property of every description.

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Most valuable coal mines, at Nailstone, near Bagworth, in the county of Leicestershire. To be let, for a term of years, by agreement upon, all those very valuable BEDS or SEAMS of COAL, situated at Nailstone aforesaid, extending under 370 ACRES of LAND, or thereabouts, in a ring fence, and adjoining the prosperous collieries of Lord Maynard on the east, and on the west are the extensive collieries belonging to the Leicester and Coal Company at Ilkeston.

The Leicester and Coal Company now passes within half a mile of this property, and by its markets have been opened for the sale of the coal, the produce of these mines, in the metropolis, Leicester, Northampton, and in many of the most important towns of the Kingdom. These mines have been proved by the operations of the two important collieries before mentioned, and it has been most satisfactorily ascertained that they are free from faults, and are regular and uniform in their position throughout this estate. The quality also of these mines is proved to be excellent, and the demand for coal very great and certain.

All further information may be obtained by applying to Mr. Henry Holt, mineral agent, Wakefield; Messrs. Sadlows, Torr, and Janeway, 38, Bedford-row, London; or to Mr. T. M. Lee, solicitor, Leeds.

STEAM-ENGINE FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT, a 30-inch cylinder STEAMING ENGINE, single acting, 9 feet stroke in cylinder, with steam case, boiler, about 11 tons, and axles and frames for 72 heads. Applications to be made to Hocking and Loam, engineers, Redruth.

Dated June 26, 1850.

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THE "KOH-I-NOOR" DIAMOND.

As this celebrated gem has lately come into our possession, the following account, from the manuscript of a gentleman long resident in India, as given in Dr. Murray's work on the diamond, will be found interesting to those who are unacquainted with its early history:—

"The Koh-i-noor, or mountain of light, is believed by the Hindoos to have descended from their mythological heroes. It is 1½ inch long, 1 inch broad, and rises half an inch above its gold setting. It weighs 280 carats, and is said to have weighed when rough, 793 carats. This diamond is set in an amulet with a diamond on each side, about the size of sparrows' eggs. Runjeet Singh has also a ruby of considerable size, with the names of several kings engraved on it, and among others those of Aurangzeb and Achmed Shah. He has also a topaz as large as a billiard ball, for which he paid 20,000 rupees. The musnud of Aurangzeb was of solid gold, and with the peacock ornament richly studded with jewels, which crowned it, was estimated at 20 millions of gold. Over the palace at Delhi was this inscription:—If there be heaven on earth, it is here—it is here."

The Prince Aulungeer, in 1658, deposed his father, Shah Jehan, emperor of Delhi, and usurped his throne. He caused to be constructed the famous 'Tukht-i-tasos,' or Peacock throne, which represented in appropriate jewels a peacock with its head overlooking, and its raised and spread tail overshadowing, the person of the emperor when sitting on the throne. The natural hues of the bird were exquisitely imitated by the richest gems of the world, and the eyes were supplied by two celebrated diamonds, the largest known, called (as every Asiatic double name must have a gingle), 'Koh-i-noor,' the mountain of light, and 'Koh-i-Toor,' the mountain of Sinai. Having completed this throne, relinquishing the name of Aulungeer, or 'Grasper of the Globe,' he assumed that of Aurangzeb, or 'Ornament of the Throne.' He died in 1707, aged 87, and his throne remained in possession of his successors till 1728, when Nadir Shah invaded Indostan, took and plundered Delhi, and massacred 125,000 men, women, and children: together with 60 millions of other plunder, he carried off and broke up the Peacock throne, but being assassinated on his return towards Persia in 1729, his treasures fell to his general Ahmed, chief of the Abdalli Afghans, of Cabul, called also the Doodani, from each man wearing a Dood, or pearl in the right ear. He seized on the throne of Cabul; in the confusion of this exploit, the Koh-i-Toor was for ever lost. He kept possession of the Koh-i-noor, and dying, bequeathed it to his son and successor, Shah Timour, who left it with his crown to Shah Zemaun, his eldest son. He was deposed, and his eyes put out by his next brother, Shah Shujah ool moolok, who got the Koh-i-noor and the kingdom. He in his turn was ejected by Shah Mahmoud, the third brother, who was Shah, or king of Cabul. Shah Shujah, however, retained possession of the diamond, and he and Shah Zemaun, whom he had blinded, took refuge at the court of Runjeet Singh, the Rajah of Punjab, in Hindostan, who at first received them hospitably, and made war on the usurper, Shah Mahmoud, from whom he took Cashmere, for himself, which he held. But in a short time Runjeet began to oppress the two ex-kings, extorted all their wealth, and finally the Koh-i-noor from them. They then came over to Loodianah, in our territory, where they existed on an annual pension of 60,000 rupees (6000*l.*) each, and 6000 rupees (600*l.*) to each of their eldest sons. I saw them at Loodianah, on the Rhyphas, in 1821. Runjeet Singh had the diamond at Lahore, his capital. A Bengallee shroff, or banker, named Seelchard, resident at Loodianah, having occasion to visit Lahore on the Rajah's business, asked his highness for permission to see the jewel, which being granted, Seelchard fell on his face and worshipped the stone!"

His subsequent history and recent capture by the Anglo-Indian army is too well-known to need recapitulation.

* The Koh-i-Toor, "the mountain of Sinai" was plundered by Nadir Shah, afterwards taken from the Persians by the Russians, and is now one of the Imperial crown Jewels; it weighs 193 carats, and is valued at 369,800*l.*

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Baxter's Hartley 15 6—Chester Main 14 9—Creswell Main 13—Davison's West Hartley 16 6—East Adair's Main 13—Hollywell 16—North Percy Hartley 15 3—Original Windsor's Poston 12 6—Ord's Main 15—Ravensworth West Hartley 15 9—South Peareth 12 6—Tandfield Moor Butes 13—Townley 14—West Hartley 16 6—Wylam 14 9—Yall's End Acon Close 15 6—Bewick and Co. 15 3—Hedley 13 6—Lawson 13—Morrison 15 3—Original Gibson 15—Walker 15—Whitfield 14 6—Eden Main 15 6—Lambton Primrose 15 9—Bell 16—Belmont 15 9—Bradyll 16 3—Creswell 14 9—Hetton 16 9—Hawell 16 9—Kepler Grange 16—Lambton 16 3—Russell's Hetton 16 3—Stewart's 16 6—Caradoc 16—Hartlepool 16 6—Kelso 16 3—South Hartlepool 16—South Kelso 15 9—West Hartlepool 16 6—Whitworth 13 6—Adelaide 15 9—Cleveland 15 6—South Derham 15 3—Tees 16 9—Vernon's Tees 16 6—West Cornforth 15—Birchgrove Graila 15—Cowpen Hartley 16 6—Derwentwater Hartley 15 6—Hetton Kuts 11 6—Snappethorpe 15—Ships, 127*l.* sold, 74*l.*

WEDNESDAY.—Clavering's New Tanfield 13 3—Davison's West Hartley 16 6—East Adair's Main 13—North Percy Hartley 15 6—Ord's Main 15—Ravensworth West Hartley 15 9—South Peareth 12 6—Tandfield Moor Butes 13—Townley 14—Wylam 15—Yall's End Bewick and Co. 15 3—Gosforth 15 6—Hedley 15 6—Original Gibson 15 3—Riddell 15 3—Eden Main 16—Lambton Primrose 16—Bell 16—Belmont 16—Bradyll 16 6—Hetton 16 9—Hawell 16 9—Kepler Grange 16—Lambton 16 3—Cassop 16—Kelso 16 6—Whitworth 14 6—Adelaide 15 9—Seymour Tees 15 6—South Derham 15 6—Tees 16 9—West Cornforth 15 6—Alles Steam 13 6—Birchgrove Graila 15—Derwentwater Hartley 15 6—Ships at market, 59*l.* sold, 30*l.*

FRIDAY.—Buddle's West Hartley 15 9—Carr's Hartley 15 9—Chester Main 14 9—Clavering's New Tanfield 13 3—Coxon's West Hartley 15 6—Davison's West Hartley 15 9—East Adair's Main 13—Hedley 14 6—Hollywell 16—North Percy Hartley 15 3—Windsor's Poston 12 6—Ravensworth's West Hartley 15 6—South Peareth 12 6—Tandfield Moor 13 6—Tandfield Moor Butes 13—Townley 14—Walker Primrose 13—Yall's End Bewick and Co. 15 6—Bell and Brown 15 6—Harton 15 3—Hotsprings 15—Hedley 15 6—Northumberland 15—Eden Main 16—Lambton Primrose 16—Bell 16—Belmont 16—Bradyll 16 3—Hetton 16 6—Hawell 16 9—Lambton 16 3—Richmond 16—Russell's Kelso 16 3—Stewart's 16 6—Hedley 14 9—Kelso 16 3—South Hartlepool 16—West Hartlepool 16 6—South Derham 15 3—Tees 16 9—Vernon's Tees 16 6—West Cornforth 15—Birchgrove Graila 15—Cowpen Hartley 16 6—Derwentwater Hartley 15 6—Ships at market, 75*l.* sold, 62*l.*

PEDNANDREA TIN AND COPPER MINE, REDRUTH.

Estimated capital, £15,260, in 512 shares of £30 each.

Upon the Cost-book Principle, and under the management of Capt. William Richards, of Redruth.

The first call to be £10, in two instalments, at one and four months respectively. It is enough to state that this highly promising and extensive SETT is situated in and around the town of Redruth, close to the following prosperous and dividend-paying mines:—viz. : Carn Bros, South Bassot, North Bassot, and Wheel Buller, and in the immediate vicinity of others of known value and productiveness. The whole of the settlements have been secured for twenty-one years, unexpired, from the respective lords and tin bounders, at a reduced scale of dues, and a large majority of the shares have been already appropriated.

The following report (annexed) is from the only surveying agent at the last working:—

PEDNANDREA MINE.

Levant Mine, St. Just, March 6, 1850.
DEAR SIR,—In answer to your letter to me requesting a report upon the above mine, I beg to inform you, that I am the only surviving captain who managed this mine at its last working, and that I consider the speculation a fair one, if worked according to my views—viz. : that a 30-inch cylinder engine, should be at once placed in the present engine-house, and fork the water to the 80 fms. level under the hill, the entire depth of the mine being 90 fms. under the adit, and the adit being about 30 fms. from the surface, the levels should be then driven east. There is now in the 39 fms. level end, which is about 80 fms. east of the engine-shaft, a tin lode, about 2 feet wide, worth from £10 to £12 per fm., and was so left when the mine ceased to work. About the 60 fms. level there is a splendid lode of tin, which was left at half tribute, whilst the materials on the mine were drawing, and from which four men, who went down and never returned during three days, realized a profit on their proportion of the tin they brought to the surface, of £18 per man; and if this lode continues, there can be no doubt that this alone will give a handsome profit to the adventurers. This is my report, and I shall be at all times ready to furnish you with any information you may require. I am, &c.,
To R. Hearse, Esq.
RALPH GOLDSWORTHY.

The remaining shares will be at once appropriated to the earliest respectable applicants, and as the first general meeting of shareholders is advertised for Thursday, the 31st inst., at Andrew's Hotel, Redruth, at six p.m., immediately after the ticketing for copper ore, an early application is necessary to be made to the Provisional Committee, at Bank-house, Redruth; or to R. H. Hearse, Esq., pursuer of the mine, Green-lane, Redruth. Applications for particulars can be made in London to Mr. Evan Hopkins, C.E., 13, Austinfriars. Dated Oct. 9, 1850.

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These extensive Lead Mines are situated about two miles from Newton Stewart, near the head of Wigton Bay, in the county of Kirkcubright, and lie at the foot of a range of mountains nearly at the junction of the clay slate and granite rocks.

Black Craig and Craigton Mines are held under lease for 31 years, from the respective proprietors, and at one-fourteenth dues. These sets extend about three miles on the course of the lodes, and two miles from north to south. The principal lode crosses a large hill, and runs in the direction of south of east; it underlays to the south, and is from 18 to 35 feet wide.

This extraordinary lode was discovered about a century ago, while forming the present military road over the hill referred to, where the ore was found in a solid bunch of considerable thickness. Several other courses of ore were afterwards proved on the course of the lode, some of them extending to nearly 100 fms. in length, and varying from 3 to 5 feet in thickness. In prosecuting these discoveries, immense quantities of ore were raised, and at a very small cost. The poorer portions of the lode were then left as valueless, but which can now be worked at a considerable profit by means of the present machinery for crushing and dressing the ore, and other appliances which were unknown at the time referred to.

Very large profits were then realized from these mines, for many years amounting to above £25,000 per annum, and it is fair to presume, that when the complete and powerful machinery recently erected is in full operation, and the workings extended on the courses of ore now standing between the deep adit and the 25 fm. level, that similar large profits will be realized.

One has been recently discovered in the sets, extending considerably east and west of that portion of the lode already developed, and there can be little doubt will prove equally productive. Several applications have been made by miners to take bargains on the whole ground referred to, and to work on tribute from the surface.

The present available plant consists of about 600 fathoms of adit levels, through which a horse iron railway of at least 500 fathoms has been laid, and extending to the dressing floors. There is also about 500 fathoms of engine and other shafts; several large reservoirs, houses, offices, and joiners' and powder and ore house, dressing floor, stock of mining materials, railway wagons, tools, implements, &c. The machinery consists of a water-wheel, 30 feet diameter, and 2 feet 9 inches breast, used for driving the crushing mill and dressing machinery. There is also a 40-horse steam-engine, with pumping and winding gear; the whole of which has been recently estimated at the value of £16,000.

During the twelve months ending May 1st, 1850, 326 tons of lead ore were raised and sold at the net price of £2768*l.* The cost of raising the same, including dressing, dues, timber, &c., was £2496*l.* leaving a profit of £1266*l.* upon the twelve months' workings. Since the month of May, chief attention has been devoted to the clearing of the engine-shaft in the western ground, and it is expected the water will be drained from the bottom level in a few days, from which it is calculated that considerable quantities of ore will be speedily raised.

These mines were the property of gentlemen who sold a portion of their interest at £5 per share, having, previous to so doing, undertaken to pay all the cost of working the mines up to the 30th of June, together with all expenses connected with the completion of the steam-engine, and the pumping and winding apparatus, being entitled to all ore raised up to that time, and at the expiration of the term specified they delivered up all the mines to the shareholders, generally free of all debts and liabilities whatsoever, the shareholders becoming from that date entitled to all benefits and profits. The original proprietors are disposed to part with a further small portion of their remaining interest to the public, at the rate of 5*l.* per share; and as beyond all doubt the company will shortly be in receipt of rapidly increasing funds, from the sale of the ore, and as at the present moment there is a considerable balance in the hands of the company, the advantage is confidently offered to the public as one of great promise and advantage. All parties desiring an interest in this undertaking are at liberty to send their own agents to inspect the mines. The cost-book, with the rules of the company, can at any time be inspected, and every information obtained, and a plan of the mines, with specimens of the ore, can be seen on application to the secretary, 13, George-yard, Lombard-street.

IMPORTANT DISCOVERY OF SILVER LEAD MINES, near BRISTOL.—The attention of persons interested in MINING PROPERTY is particularly directed to these valuable SILVER-LEAD MINES, recently discovered, and proved at considerable expense. It is proposed to FORM A COMPANY TO WORK these MINES, to be called the TITCHINGTON HILL SILVER-LEAD MINING COMPANY, to be conducted on the Cost-book Principle, which, by Act of Parliament, exempts shareholders from any liability beyond the amount subscribed on their shares.

The sett, or grant, comprises about 80 acres, and is held direct from the Lord of the Manor, at 1-20th dues, or 5 per cent. on the produce, for a period of 21 years, from June, 1850. The situation is highly advantageous, being only 10 miles from Bristol, four from the Wickwar Station, on the Birmingham and Bristol Railway, and within 6 of the River Severn. Several very valuable lodes have been discovered, three of which have been explored to some extent, showing throughout indications of a highly metalliferous quality, which the reports will fully explain, and samples seen at the Company's office. From the peculiar situation of the lodes, and the natural character of the district, it is considered that expensive machinery will be unnecessary.

A considerable sum of money has been expended on the only required speculative outlay, the lead being actually discovered. Gossan, fluor-spur, sulphuret of barytes, and other indications of there being a largely productive mine, have been found, fully justifying the shareholders in anticipating a return on the capital invested, equal to the most valuable mine now working.

The mine is to be divided into 3072 shares; 2272 of these will be issued to the public, on which £2 per share is to be paid on signing the Cost-book; this sum the proprietors are fully assured will carry on the works effectually.

Various assays have been made, and the ore is found to be exceedingly rich in silver; one by Mr. Clements, of the Panther Lead-Works, Bristol, produced 554 per cent. of lead, and 71 ozs. 1 dwt. of silver to the ton of ore, and valued by him at £110*l.* per ton, as produced at the month of the mine; another by Mr. Johnson, of 79, Hatton-garden, Lonsdon, produced 12 ozs. of lead and 68 ozs. of silver to the ton. The price of lead or silver averages about £11 per ton.

Applications for shares to be made to Mr. S. J. Green, at the offices of the Company, No. 9, Hart-street, Bloomsbury-square, London, where specimens of the ore may be seen; and to Mr. Wray, Alveston, near Bristol, with whom the cost-book will lie for signature, or the convenience of country shareholders.

STIRLING'S PATENT YELLOW METALS.—Adapted for SHEATHING, BOLT STAYES, BOLT NAILS, DECK NAILS, as reported by the late Mr. Owen, Supervisor of Metals to the Admiralty; also for PROPELLERS, FRAMEWORK SCREWS, PISTONS, CYLINDERS, COCKS (particularly where there is exposure to corrosion), RAILWAY CARRIAGE AXLE BEARINGS, and for all machinery subject to friction.

Prices per lb. in castings, 9d.
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THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 30th of every month; and from Suez on or about the 10th of the month.

Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA—On the 20th and 29th of every month. CONSTANTINOPLE—On the 29th of the month. ALEXANDRIA—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th, 17th, and 27th of the month.

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